

COMPUTERWORLD

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NEWSPAPER



Margaret Holt

Her Career Path Reads Like Road Map to Top

By Lois Paul
CW Staff

NEW YORK — Women aspiring to climb the DP management ladder have to be willing to move to where the action is.

This is the advice of Margaret Holt, eastern division manager of General Electric Information Services Co. (Geisec), whose own career path reads like a road map beginning in West Virginia, running through Washington, D.C., London and Houston and stopping in New York.

Holt accepted the promotion to eastern division manager for Geisec at the end of September. The job required a move from Washington, D.C., where she had been manager of the firm's 50-person customer service department. The switch still entails a commute, she explained, noting that her six-year-old son will remain in Washington until she has completed the relocation. "I didn't want to move to New York City, but the opportunity was here," Holt said.

She noted that of the 50 people she currently is supervising, seven have families that remain in Washington, D.C. Six are men. The lone woman is spending weekends with her husband and child in Maryland and working in New York on weekdays. "It is her crack at management," she said. "Most women wouldn't make that sacrifice."

Holt's new position is her first in sales. "I guess Geisec sort of has the feeling that you haven't really been in the real world or fought in the streets until you have done a pure

(Continued on Page 7)

DEC Enhances Compilers, DBMS-20, RSTS/E and CTS-500

By Lois Paul
CW Staff

MARLBORO, Mass. — In conjunction with its hardware product announcements last week (story at right), Digital Equipment Corp. unveiled enhanced versions of its Fortran and Cobol compilers for Decsystem-10 and 20 mainframes; an update to its DBMS-20 data base management software for the Decsystem-20; and new releases of its RSTS/E and CTS-500 operating systems for its PDP-11 minicomputer line.

The software enhancements were designed to increase throughput performance over previous software versions and to improve data integrity, according to a DEC spokesman.

The Fortran enhancement, based on the Ansi 1966 Fortran standard, reportedly provides formatted I/O capability as specified by the Ansi 1977 standard. Called Fortran-10/20, the software product is a globally optimizing mainframe-class Fortran that is said to encompass improved memory management, open file support and runtime error handling.

On the Decsystem-20, Fortran-10/20 supports Version 6 of DBMS-20.

The Cobol enhancement, called Cobol-68/74 General Electric Co. reportedly conforms to the Ansi 1974 Cobol standard. Its features include multikey beam

(Continued on Page 8)

Looking for Staff With 'Potential'? GE Has Suggestion: Profile Sheet

By Marguerite Zientara
CW Staff

BOSTON — How does a firm know if it is hiring the best systems personnel, both in terms of productivity and potential career development? General Electric Co. asked itself that question more than three years ago, when it noticed that the systems people it was hiring had little potential and were not promotable "over the long haul," according to Roger Hennessey, manager of personnel resources development for GE's Corporate Information Systems Planning Operation in Bridgeport, Conn. Speaking at Data Training '81 here last week, Hennessey recounted his company's development of an Information Systems Management Program, based on a 14-year study by the Boston-based McBer & Co., a management and consulting firm.

Based on "behavioral event interviews" with 21 systems designer/programmers at six GE sites and a survey of 121 systems designer/programmers at seven GE sites, McBer & Co. attempted to find what distinguishes an average worker from a su-

perior worker, what makes a productive programmer and the types of things for which managers should

Data Training '81 coverage continues on Pages 14-17.

select and train. With emphasis on behavioral factors vs. technical aptitude. (Continued on Page 6)

Decsystem-10 Gets Multiprocessing via Three CPUs

By Tim Scannell
CW Staff

MARLBORO, Mass. — Digital Equipment Corp. last week announced a triple-processor multiprocessing capability that it claimed boosts the overall performance of its Decsystem-10 mainframes and can be used to override system failures.

At the same time, the firm unveiled:

- A version of its RP07 Winchester-technology-based disk for the Decsystem-10 and 20 mainframes.

- A single-board disk controller that can be used on its LSI-11 microcomputers, including the just-announced 22-bit LSI-11/23 Plus.

- An extension of its Deserve hardware maintenance coverage.

All of the announcements were made at the firm's Decus users meeting held in Los Angeles last week.

The Decsystem-10's triple Symmetric Multiprocessing (SMP) capability allows three processors to share equally the same memory and operating system. The triple-processing capability is an enhancement of the firm's dual SMP introduced within the past year, a spokesman noted.

In a triple multiprocessing environment, three Decsystem-1090 central processing units operate with a minimum of about 4M bytes of memory, three high-capacity disk drives and up to 512 terminal lines. All three CPUs run under a single copy of DEC's Tops-10 operating system, eliminating the need for extra copies of support software and disk space, the spokesman said.

The three CPUs work from a single job queue and a common queued I/O protocol. The single job queue arrangement reportedly enables the processors to respond to the total job load, while the I/O protocol handles requests that are independent of the physical locations of files and peripherals. (Continued on Page 8)

Product Spotlight Rush to Local Nets at Fever Pitch

By Bruce Hoard
CW Staff

As the rush to wire the office — and the country — mounts to fever pitch, vendors are offering more and more features with their local-area networks.

The vendors on the charts found on Pages 10 and 11 are by no means the only ones selling local nets. In some cases, they are market leaders; in others, new contenders. However, these

firms represent a cross-section of industry offerings.

In presenting an overview of this relatively new area, a basic definition of local networks is in order. Dr. Kenneth Tharner, president of Architecture Technology Corp. and a frequent speaker on local-area networks, suggested the following three criteria as a definition. Local nets are:

- Owned by a single organization.

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Arpanet Slated for Jan. 1, 1983 Cutover To Protocols With Commerical Impact

By Brad Schultz

CW New York Bureau

WASHINGTON, D.C. — Arpanet, the Pentagon-sponsored packet network for most electronic mail that supports U.S. computing research, is slated for Jan. 1, 1983 cutover to two protocols that some experts predict will revolutionize commercial data communications.

Considered the world's first packet network, Arpanet is expected to become an Internet — a network of networks — after implementation of the Transmission Control Protocol (TCP) and Internet Protocol (IP), said an informed source, who revealed the cutover target date. TCP/IP will allow different brands of equipment to communicate efficiently (CW, Dec. 7), the source stated.

A number of universities, research institutes and software houses have been developing TCP/IP under Defense Department funding. But the protocol pair may arrive with commercial systems within a year or two, Computerworld was told. TCP/IP testing reportedly involves processors from IBM, Digital Equipment Corp., Honeywell, Inc., Control Data Corp., Hewlett-Packard Co. and Perkin-Elmer Corp.

TCP/IP would therefore come to commercial users about the same time that AT&T's Advanced Communications Service (ACS) is expected. According to AT&T spokesmen, ACS will also force smooth links among previously incompatible hardware

brands.

The alleged imminence of ACS plus the Reagan administration's massive defense spending hikes — which lure vendors into making the hardware bound for commercial sites — give commercial users reason to plan for links among many hardware brands, an expert declared. That would end many users' nearly total dependence on a particular brand, he pointed out.

Scientists Confident

Arpanet was not built to support wartime communications among the military, but the planned cutover to TCP/IP — roughly a year away — suggests that computer scientists have a lot of confidence in the protocol pair. An Arpanet crash would seriously disrupt American research and development in many fields of science and technology, one expert maintained.

Numerous tests have already been run on TCP/IP by Bolt, Beranek & Newman, Inc. (BBN), Mitre Corp., SRI International and other major R&D/software houses, so the cutover would hardly be a shot in the dark.

A number of TCP/IP developers seem to believe that Arpanet will be ready Jan. 1, 1983 cutover — but not all of them, Arpanet correspondence revealed.

Available to all Arpanet subscribers, electronic mail files on TCP/IP include the following dispatch by a Stanford University researcher:

"Some people [believe] that TCP work on [Digital Equipment Corp.'s] T-ops-20 [operating system] is 'done.' I believe the 1983 deadline for... TCP conversion will not be met. I have worked on BBN's TCP at the user program level; specifically, I have implemented user Telnet for TCP as part of a general multiple-network Telnet for T-ops-20.

"Briefly, the T-ops-20 TCP implementation in its present form is unacceptable to Stanford and many other T-ops-20 sites. It is said that so many bright people at BBN have had to maintain this dog instead of working on a complete rewrite."

This critic wrote, in his Arpanet communique, that "the TCP process consumes between 40% and 50% of the CPU. We simply cannot sacrifice that much of an already-loaded CPU to implement a network."

Nevertheless, TCP/IP is virtually completed for Honeywell, Inc. systems under Multics and Hewlett-Packard's HP-3000, exchange of Arpanet mail revealed. The protocol pair is also undergoing tests for operation with packet radio stations in local networks — a form of short-haul communications.

Correction

The headline on Page 78 of the Nov. 30 issue should have read, "Court Grants Intel [not Intel] 60-Day Extension."

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Implementer Calls 'Decoupling' Key to ACS

By Phil Hirsch
CW Washington Bureau
WASHINGTON, D.C. — "Decoupling" will be a key feature of AT&T's Advanced Communications Service (ACS), according to William Smith, the man in charge of implementing the communications network service. ACS will be the first offering of "Baby Bell," the separate AT&T subsidiary that could begin offering customer equipment and ser-

vices by Jan. 1, 1983 [CW, Nov. 7].
Interviewed last week, Smith explained that by decoupling the ends of the message path, ACS will do much more than permit the customer to communicate with other terminals and hosts employing different information codes, communications control protocols and transmission speeds. It will also offer:
• *Store/forward and immediate delivery service.* Either or both will be

available through the same user terminal.

• *Customized/convertible message formats.* By writing "simple Cobol instructions," Smith said, the user will be able to define customized forms displays to guide the terminal operators who prepare the on-line messages. If a message must be transmitted to a dissimilar terminal, it will be possible for the user to provide the ACS network with additional Cobol instructions to allow automatic information reformatting.

• *Customized access.* Individual terminals can be barred from communicating with other terminals, files or shared facilities. It will be possible to change these specified restrictions on a dynamic basis.

• *New applications, software and hardware.* ACS will allow the user to test enhancements on a reduced scale so that benefits can be measured before committing to a big investment.

Providing examples to illustrate potential user benefits from these features, Smith suggested that in order to reduce communications charges, a company with numerous dispersed sales offices could store incoming orders until a specified number had collected, then transmit the orders in batches to its warehouse. Rush orders could still be sent to the receiving point in real-time mode.

If a shared resource went down, Smith said, ACS' customized, dynamically redefinable access capability would automatically reroute the affected users to alternate facilities or place the users in a hold queue. This capability would also allow a terminal to be brought up incrementally.

A company that transmits large numbers of standardized forms to remote locations that employ different formats could automatically convert these documents with ACS resources, he added.

Layered Like an Onion

Comparing the ACS service to an onion, Smith explained that its innermost layer is a packet-switched network, which AT&T's proposed separate subsidiary will obtain from the regulated side of the Bell system. The next layer is composed of ACS nodes, which are linked to the nodes of the inner packet network by 56K bit/sec analog or digital channels. The outer layer of the onion is composed of access lines tying each user's site to the ACS nodes. These links will be either leased or dial-up facilities and will be obtainable from Bell's competitors — assuming that they interface with ACS — as well as AT&T operating companies.

The ACS node is essentially composed of two minicomputers — a Digital Equipment Corp. 32-bit VAX-11/780, utilizing the VMS operating system, and IBM's Series/1 computer. Initially, Smith said, ACS will support all of the protocols accommodated by IBM's Series/1 Real-Time Programming System operating software.

Based on a statement AT&T recently submitted to the Federal Communications Commission (FCC) with its proposed capitalization plan for the "separate sub," ACS will support Asci, Ebcid, polled and contention line control, character mode and

block mode; asynchronous and synchronous, cluster-controlled and stand-alone devices. "The protocol support will be evolutionary, with support initially provided for the most widely used data communications protocols in order to accommodate the majority of terminal types and host computers currently installed," according to this statement.

ACS service nodes, AT&T added, perform these basic functions: "access control" (terminal and line handling), "data movement" (packetizing and depacketizing), "communications processing and storage" (customer program execution, storage control, service administration and node maintenance). The VAX-11 is responsible for the latter functions while the Series/1 handles access control, Smith said.

He predicted that the first ACS users will access the network via standard dial-up circuits because this type of connection can be implemented in minimal time. Private line access will come next. As Bell operating companies eventually implement the Local-Area Data Transport (LADT) capability announced by AT&T officials at the recent National Telecommunications Conference in New Orleans [CW, Dec. 7], this type of access may lead in popularity, Smith indicated.

Smaller volume data communications users, particularly those who are not currently employing on-line terminals, are major marketing targets for ACS, he explained. Typically, such users access a network through low-speed, unbuffered, keyboard-equipped terminals.

Bell Foes Offer Agenda to House

WASHINGTON, D.C. — A newly formed group called the Competitive Telecommunications Coalition last week sent the House of Representatives Telecommunications Subcommittee a "checklist of legislative principles." The coalition — composed of nine companies and trade groups that have been fighting AT&T over terms of the new communications legislation being drafted in Congress — compiled the checklist to "assist" the drafting effort now under way in the subcommittee.

The coalition recommended:
• Deregulation of individual services and products must be made consistent on the "completion of full separation" and an "effective test must be developed to show that effective competition exists for each product or service before it is deregulated."

• "AT&T must not be permitted to manipulate the availability, quality or characteristics of basic transmission service offerings in ways that create artificial advantages for its unregulated affiliates."

• "No unregulated AT&T affiliate should be permitted to own transmission facilities."

• "At least 30% of the stock of any unregulated AT&T affiliate must be held by persons other than AT&T and its other affiliates."

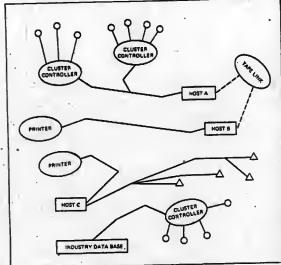


Figure 1: Example of Customer Networks

One of ACS' reported advantages is that it enables nominally incompatible terminals and host computers to communicate. Figure 1 shows four independent networks among which communications can be achieved only by manual methods — for example, moving magnetic tapes between host A and host B. Figure 2 shows how the four networks can be interconnected through ACS. Note that the two printers can now back up each other.

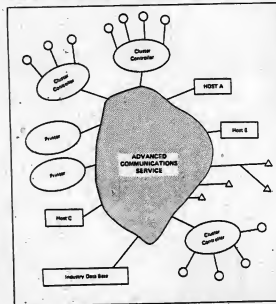


Figure 2: Example of Customer Subnetwork

Key Provisions Outlined

Communications Bill Goes to House Floor

By Phil Hirsch

CW Washington Bureau
WASHINGTON, D.C. — The House of Representatives Telecommunications Subcommittee last Thursday released its long-heralded draft of a bill to revise the 1934 Communications Act.

Following are the draft's key provisions:

- All presently installed terminal equipment would remain tariffed until it is fully depreciated. By comparison, S. 998, the communications act rewrite bill passed last summer by the Senate, would devalue installed equipment as rapidly as three years after the legislation was enacted.

- Inside wiring could remain under tariff or be sold to the customer, at the customer's option.

- Basic communications services remain under regulation until there is "effective" competition. The competitive alternatives must provide "comparable quality and geographic range at a comparable cost."

The adequacy of alternative facilities also hinges on whether "they offer sufficient capacity to ensure competitive pricing in the absence of regulation."

- AT&T's 1956 consent decree is repealed and the phone company is allowed to offer unregulated services through one or more separate subsidiaries. These subsidiaries are divided into two categories: "limited" and "general."

The former cannot own transmission facilities or offer services similar to those provided by the regulated side of AT&T.

The limited subsidiary can manufacture and market terminal equipment, offer enhanced services like data processing or provide information publishing. However, it cannot engage in more than one of these activities.

AT&T is allowed to establish three limited subsidiaries and to own up to 75% of each organization's initial capitalization. In addition, each subsidiary can engage in joint planning with its parent, but joint ventures or partnerships with the parent are barred.

The general subsidiary can offer more services than the limited subsidiary, can construct and own transmission facilities and can, with some restrictions, provide services similar to those provided by the parent. AT&T is limited to a smaller share of the general subsidiary's equity.

"The general separate subsidiary's ability to construct facilities makes [it] a competitor of the parent," the House subcommittee explained. "In effect, the dominant carrier [AT&T] will be competing against itself."

- Tariffs filed with the Federal Communications Commission (FCC) could no longer become effective immediately, but only upon approval by the commission, "thus assuring that new rates will not go into effect at the whim of the carrier." In addition, the FCC could reject a tariff outright or prescribe its own tariff.

- All public communications carriers, whether regulated or deregulated, would be required to intercon-

nect their facilities on nondiscriminatory terms with "any transmission facility, service or terminal equipment." In addition, to prevent anticompetitive "tying arrangements" between equipment and transmission services, those who offer inside wiring would be subject to the same interconnection requirement. Furthermore, the FCC is given the right to enforce interconnection compliance.

- Yellow Pages advertising would be transferred to a separate subsidiary at its fair market value, "thereby providing a mechanism to avoid a sharp increase in the cost of some exchange services."

- All long-distance carriers would pay an access charge into a "national telecommunications fund" to cover their share of local exchange costs.

The bill would keep basic communications services regulated until there is "effective" competition and repeal the 1956 AT&T consent decree.

The fund would "subsidize the cost of local services, particularly in high-cost rural areas."

- AT&T is prohibited from engaging in any electronic information

publishing service, except for limited electronic directory information, over any of its regulated transmission facilities. Also, AT&T could not establish an exclusive relationship with a single information publisher; facilities provided to one would have to be made available to others.

Accompanying last week's release of the "Wirth Bill," named after Rep. Tim Wirth (D-Colo.), chairman of the House Telecommunications Subcommittee, were commendatory letters from several groups including the International Communications Association and the Telecommunications Users Coalition. Notable by its absence was AT&T.

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CA-JASPER/RT Realtime Performance Monitor

GE Finds 'Superior' DPers Offer Mix of Skills

(Continued from Page 1)

tude or knowledge, McBer developed a systems designer/programmer profile sheet, which is administered to those surveyed, and concluded that most superior DPers have a mixture of competencies for success.

In the area of "personal style," superior workers were found to have a fondness for complex problems but a dislike of routine maintenance work. Outstanding DPers also generally take responsibility when things go wrong, as opposed to blaming others or feeling they have no control.

The superior systems person perseveres, even if it means working long hours, while average or below average DPers tend to work nine to five and to have many outside interests, the study found.

When it comes to problem solving, high achievers start with a specific

hypothesis with which to work, for example, checking consecutively the data base, software routines and then calling in the hardware people, Hennesius said.

A low-level achiever will work on a trial-and-error basis, which is very time-consuming. While high achievers look at a problem as a challenge, the low achiever looks at it only as a problem.

Typically, the high-powered DPers exhibits causal thinking, making connections between events, while the average person readily sees patterns and the low man solves problems one at a time, Hennesius said.

A superior worker will seek more than one source of information before embarking on a problem, while the average worker will rely only on one source and only consult others when things go wrong. Generally, the low-level worker takes pride in

working on his own and does not seek help.

While the superior worker will evaluate trade-offs in dealing with a problem, the average worker will choose the easiest route and the low man will, again, deal with problems one at a time, Hennesius said.

In addition, the superior worker carries a total picture of the situation and works against a checklist of needs to track the progress of projects. As for "thinking style," superior workers tend to break projects into smaller components, while the low level worker generally makes corrections as they are needed.

In dealing with others, the high-level DPers "is very facile in testing what the user requires and considers his success to be measured by user satisfaction," Hennesius said. He puts himself in the customer's shoes and talks to the customer in concrete

terms.

The average DPers, on the other hand, will explain superfluous detail in bits and bytes, although he will generally use good visual aids to get his points across. The low-level worker tends to focus on system limitations instead of system strengths when communicating with others.

Attitudes toward their track records are also telling, according to Hennesius. The high achiever judges success by the number of systems completed, the average worker takes pride in the unique or creative techniques he has used for success and the low-level DPers "sees no end result," Hennesius reported.

Regarding "influencing skills," the top DPers present himself as an expert, builds credibility in the system and creates incentives to motivate others. "Some superior workers we interviewed had no concern with these influencing techniques," Hennesius said, "a situation which is of some concern to us because they are needed for management."

To use such techniques in a DP shop, the manager should first design an assessment form dealing with such characteristics as outlined above, according to Murray Dalziel, McBer's project director.

After the form is filled out, both as a self-assessment and as an assessment by the manager, the manager should make a profile sheet, looking for key gaps between the worker's and supervisor's perception of the worker. In this way, the worker begins to recognize his actual behavior.

Those who are average or below average in the following four categories can be trained to become better: concern for achievement, consulting skills, problem-solving skills and planning skills, Dalziel said. The process also helps in goal setting and in determining training directions.

FCC Nears Decision on Extended Dems

WASHINGTON, D.C. — Federal Communications Commission (FCC) officials reportedly were nearing a decision last week concerning an escalating argument among prospective suppliers of Extended Digital Electronic Message Services (Dems) — the wideband, digital, end-to-end communications service authorized by the commission last January.

Nine applicants have filed for the seven channel pairs allocated so

far to Extended Dems carriers (who must agree to serve 30 or more cities). There is one application pending for each of three channels, while the remaining six applicants are vying for four other channels.

The basic problem is that if the FCC subjects the contested channels to comparative hearings, and meanwhile allocates the uncontested channels, three contenders will gain a head start over their rivals. The

three firms are ISA Communications Services, Inc., Satellite Business Systems and Tymnet, Inc.

An alternative is to allocate an additional 20 MHz — enough for two more channel pairs — to Extended Dems, using frequencies now reserved for "limited" (less than 30 cities) Dems networks and then award licenses simultaneously to all of the nine companies that have submitted applications to date. However, this would mean changing the existing rules, which the FCC explicitly said it would not do in its January 1981 decision establishing Dems. Also, according to Tymnet, this scheme would not eliminate comparative hearings because some already-allocated channel pairs are not available in certain cities where applicants are proposing to provide the service.

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Holt Sees DP Sales Excellent Career for Women

By Lois Paul
CW Staff

NEW YORK — "I see a terrific success story with women salesmen," Margaret Holt, eastern division manager for General Electric Information Services Co. (Geisco), said. "I think probably our sales numbers and our sales ratios in the field are best."

With the opportunity to make more money and to remain within DP without being chained to a terminal producing code, Holt cited sales as

an excellent area of DP for women to consider.

As a woman in DP, she said she really has not experienced much discrimination. "I guess the hardest thing I have to overcome is that I am basically a friendly, optimistic, cheerful person and occasionally I will get hit with, 'Is she tough enough?'" Explaining that she handles problems on the spot, directly with the people she supervises, Holt said, "As far as I'm concerned, that

wouldn't trade in the experience that I have in different firms," Holt admitted. "I call upon some of those skills from time to time."

e lot tougher, to tell somebody right away that something's not right rather than somebody who shouts and screams and writes a bad performance appraisal at the end of the year, while all year goes by with nothing. Maybe I don't slam the office door. But I handle it."

Proportionately, there are fewer women than men in DP, she said. Holt has tried to improve the ratio by teaching a class at Geisco on career development for women and by hiring and working with women as much as possible. As to why there are not more women DP managers, she said, "I think that they sometimes don't think they can. They sort of peak out. They don't keep pushing. They don't assume they are going to

be the manager of the group."

The qualities required for women DP managers are not really any different from those required for men at that position, she said. However, "actually, it is an old story. I think they have to be just a teeny bit better." For example, the only woman in a meeting is listened to more closely and must have something "smart and erudite" to say.

Holt said that with regard to both men and women, she looks for people "with spirit" when she is hiring. As customer services manager for Geisco, she developed a career path that would take entry-level people at the "cocoon" stage and move them up through the department until they reached the "butterfly" stage.

Willingness to Move Held Critical

(Continued from Page 1)

sales job," she noted. Her area includes Manhattan, New Jersey and Philadelphia, as well as all energy and transportation products and industries on the East Coast down to Washington, D.C.

Holt's career travels were spawned in her hometown of Charleston, W. Va., where she said the goal of every young person is to move to the big city as soon as possible. Upon graduating from West Virginia University with a mathematics degree and a minor in physics, she interviewed and won a position as a Fortran programmer with Bellcom. She was part of a "special, very elite group of people set up to work on the Apollo project."

In 1965, after 14 months with Bellcom and the winding down of the space program, she decided she really wanted to work in Europe. Responding to a lead, she interviewed with TIT, whose international headquarters were located in a neighboring building. "He said, 'how much experience do you have,' and I said, 'a year,' and he said, 'you're just crazy enough to do it.' And he hired me." She helped establish a data processing bureau for TIT in London and had her first experience with Cobol programming. Holt found herself supervising, at 22, good programmers whose average age was 19. When the left London three years later, the center she had helped establish had grown to several offices.

Holt admitted that once she decided she wanted to return home, she literally threw a dart on a map and chose Houston. Her next job was as a programmer/analyst with Occidental Petroleum Co. whose DP shop then handled worldwide DP for the firm.

Subsequently, she moved to Washington, D.C., as a project manager for Blue Cross/Blue Shield. This was the first major supervisory position in which Holt was handling massive systems and coordinating the efforts of up to eight people for one project. "I learned a lot of good procedural techniques, good hard-core programming experience," she recalled. After four years, however, she made the switch to Geisco's Engineering Department as an applications programmer and had her first exposure to time-sharing.

Holt was enthusiastic about her current firm's willingness to promote its people based on performance. She began with the company as a project leader, within months moved to project manager, then to unit manager and, in various steps, to her current high-management level. "I

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SMP Boosts Decsystem-10

(Continued from Page 1)

A triple SMP can support up to 250 active jobs, about 75 more than possible under a dual configuration, the spokesman claimed. Adding two processors to a single-processor computing system can more than double and even triple overall system performance, but the actual figure depends upon the processing situation and how much I/O power is taken up by the user's applications, the spokesman noted.

Although targeted for current Decsystem-10 users, especially those who already have a dual-processor setup and need extra processing power for highly number-crunching applications, triple SMP can be used for fault-tolerant reliability.

For example, in the event of a CPU failure, SMP can dynamically reconfigure the remaining processors. The system's software can also reconfigure the system to adapt for channel, controller or disk port malfunctions, the spokesman noted.

Prices for upgrading from a dual to a triple SMP, including hardware and any necessary software changes, start at \$440,000. First shipments are scheduled for next month.

Winchester Disk Adapted

DEC's RP07 Winchester disk, introduced earlier this year for the firm's minicomputers, has been adapted for the Decsystem-10 and 20 mainframes. The RP07 has a 498M-byte storage capacity, is microprocessor-controlled and interfaces to the mainframes via DEC's high-speed Massbus.

The new version of the RP07 marks

the first time that a Winchester-technology product is available from DEC for its mainframes, the spokesman noted.

With a reported peak transfer rate of 2.2M byte/sec, the RP07 disk is supported under Decsystem's Topo-10 and Topo-20 operating systems. As many as eight drives can be connected to a mainframe through a single controller, according to the spokesman.

The RP07 costs \$38,000 and is scheduled for shipment in May 1982. DEC's RL12 disk controller is designed for its RL02 10.4M-byte disk drive and replaces the two-board RL11 controller. The controller is supported under current versions of RT-11 and RSX-11M operating systems; and under Version 4 of RSX-11M for the 22-bit addressing requirements of DEC's LS1-11/23 Plus packaged processor.

The controller costs \$1,900. It is also available in a complete subsystem consisting of the controller, an RL02 disk drive and associated cabling for \$6,900.

Finally, DEC announced at the user meeting that it is extending its Decservice hardware maintenance coverage to customers at locations throughout the continental U.S.

The extended service begins Jan. 1 and includes all of the features common to the Decservice plan and ranges from eight hours daily, five days a week, up to a continuous 24-hour, seven-day coverage.

Previously, Decservice was only available to customers within a 50-mile radius of DEC's field service offices.

DEC Enhances Software

(Continued from Page 1)

via DEC's Records Management System Version 1, additional debugging capabilities and support of internal double-precision floating point for COMPUte systems.

Version 6 of DBMS-20 is described as an upward-compatible enhancement of previous data base software. Depending upon the application, performance improvements of 18% to 100% may be realized, the spokesman said.

The Fortran-10/20, Cobol-68/74 and DBMS-20 enhancements are licensed at \$11,500, \$15,000 and \$34,500, respectively. Deliveries are scheduled 30 days after receipt of order.

In addition to the enhancements, DEC announced availability of maintenance releases on the IQL-20, Basic-Plus-2, Traffic-20 and Biss 36 software packages for its Decsystem-10 and 20 equipment.

Enhanced Operating Systems

With regard to the enhanced versions of its RSTS/E and CTS-500 operating systems for the PDP-11 line, DEC noted that a variety of features are available for the new RSTS/E release. These include Fortran-77, Cobol-68, Version 2.0 of Decnet/E and FMS-11. DEC's Forms Management System.

Dibol-11/Decform business-oriented software is available as an option for both enhanced operating systems, according to DEC. Additional-

ly, both systems feature Digital Command Language (DCL) as a command language choice. DCL under RSTS/E and CTS-500 is said to be structured to the command languages on other DEC operating systems, making the transition between operating systems easier than it was previously.

The new operating systems reportedly enable users to make optimum use of system resources through dynamic allocation. Both support up to 127 concurrent terminal users. Tasks can share computational, storage and input/output services, according to the vendor.

Version 7.1 of RSTS/E is licensed at \$17,350 and will be available in March 1982.

Standard languages for the two operating systems are Basic-Plus and the Macro-11 assembly language. In addition, CTS-500 features the vendor's DBMS-500 data management software. Optional languages for the operating systems include Basic-Plus-2, Cobol-68, PDP-11 Cobol, Fortran IV and Fortran-77.

The enhanced version of CTS-500 is basically available as part of DEC's Datasystem package, which includes the hardware and the operating system. The Datasystem line ranges in price from approximately \$1,700 to slightly under \$60,000, depending on the configuration, according to the vendor. Purchased to run on the PDP-11 line, CTS-500 reportedly will cost approximately the same as the RSTS/E operating system.

Appeals Court Gets CCIA Brief On Inquiry II

WASHINGTON, D.C. — Although the Federal Communications Commission's (FCC) latest pronouncement in the Computer Inquiry II, issued last October, was meant to clarify the "final" decision and reconsideration order issued last December, it has "compounded the defects in those decisions."

So said the Computer & Communications Industry Association (CCIA), together with three fellow believers in a supplemental brief submitted to the Washington, D.C. Federal Court of Appeals earlier this month. The other petitioners were the Independent Data Communications Manufacturers Association (IDCMA), National Burglar and Fire Alarm Association and Southern Pacific Communications Co. All four want the court to remand or overturn the FCC's decision.

The supplemental brief alleges that the FCC's latest order:

- Allows Western Electric to market terminal equipment directly to end users despite the FCC's finding that this equipment must be marketed through the separate subsidiary.
- Places "imprecise and incomplete" conditions on the AT&T subsidiary. One example: The commission, according to the brief, "is allowing the subsidiary to perform installation and maintenance for both regulated and unregulated equipment without consideration of the dangers of cross-subsidization and other anticompetitive activities which originally led the FCC to require the separation of installation and maintenance."
- Deals inadequately with the flow of technical information within the Bell system. The brief argued that requiring AT&T to disclose information to its competitors about network modifications when disclosing this information to the separate subsidiary is inadequate. Allegedly, it does not bar Western Electric from getting the information in advance.

Xerox Releases Ethernet Specs

PALO ALTO, Calif. — Xerox Corp. has published two documents defining higher level protocols required for communications with its Ethernet local-area network.

Designed to encourage Ethernet compatibility among various vendor devices, the protocols describe Ethernet's adherence to the third through sixth levels of the International Standards Organization's (ISO) Open Systems Interconnect Model.

Earlier specifications released by Xerox, Intel Corp. and Digital Equipment Corp. described Ethernet's adherence to the first two layers.

The new Xerox documents are "The Internet Transport Protocols" and "Courier: The Remote Procedure Call Protocol." They may be obtained free of charge from Xerox at the Network Systems Administration Office of the Office Products Division, 3393 Coyote Hill Road, Palo Alto, Calif. 94304.

She Needed Some Time Off To Concentrate on Package Maintenance

DUNCAN, S.C. — Susan H. Zeiger, project manager of financial systems at W.R. Grace & Co.'s Cryovac Division here, needed some time off. She recently sent the following memo to Steve E. Karinschak, controller of the division:

"This is to inform you that I have begun developing a new software package. I began research on vendors five years ago and have worked with one vendor for almost four years.

"The package is called C.H.I.L.D. and will have the following capabilities:

- Efficient input and output.
- After training, user friendliness.
- Complete error messages.
- Versatility.
- A basic design similar to other software packages that have been proven to work.

"The development of C.H.I.L.D. will take seven more months. Delivery is guaranteed during July or August 1982, although no specific date has been set.

"A major advantage of the package is that I will be completely in charge of the development without need for outside assistance, except for an occasional session with a consultant who is a doctor in his field. Cost to the company, therefore, will be minimal.

"One drawback I feel I must mention is that maintenance after the package arrives will be extensive, requiring several months of my time away from the office. I will do my best, however, to ensure that my responsibilities are covered during that time.

"Although I have not discussed this matter previously, I can assure you that I have given the decision careful consideration and have the complete support of the vendor."

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Company Name	Broadband	Baseband	Live Access Method	Cable Medium	Transmission Speed	Number of Stations/Devices	Topology	Price Per Device Attachment	Addressing	Extra Software Charge
Amdax Corp.			TDMA*	Coaxial	7M bit/sec	16,000	Bus	\$1,465 With 50 Devices	16 bit (Logical)	No
Cablenet (Two Versions)	X				14M bit/sec			\$1,162 With 80 Devices	12 bit (Physical)	
The Decat Group	X	X	CSMA/CD*	Coaxial Twisted Pair	2M bit/sec	4,808	Bus	\$255 With 8 Devices	8 bit	No
Deenet			Proprietary Scheme for Each Device	Coaxial	300K bit/sec	10,000	Bus	\$400 to \$800	8 bit	No
Interactive Systems/3M, Inc.	X				2.1M bit/sec					
Videodata										
Network Systems Corp.	X		CSMA/CD	Coaxial	50M bit/sec	64	Bus	\$40,000	8 bit	\$150 to \$400 Per Month
Hyperchannel										
Proton Associates, Inc.			Token Passing	Twisted Pair Coaxial Fiber Optics	10M bit/sec	255	Star/Ring	\$500 With 18 Devices	8 bit	No
Pronet			X							
Sytek, Inc.			CSMA/CD	Coaxial	128K bit/sec	20,000 to 60,000	Bus	\$525 With 5 Devices	16 bit and 32 bit	No
Localnet Model 20/Model 40	X				2M bit/sec			\$40 With 256 (Plus Software)		
Ungermeier Bass, Inc.	X		CSMA/CD	Coaxial	10M bit/sec	1,024	Bus	\$450 With 24 Devices	48 bit	No
Net/One										
Wang Laboratories, Inc.	X		CSMA/CD	Coaxial	8.8K bit/sec to 12M bit/sec	16,000	Bus	\$380 With 10 Devices	16 bit	No
Wangnet (Three Bands)										
Xerox Corp.			CSMA/CD	Coaxial	10M bit/sec	1,024	Bus	\$250 to \$1,000 Depending on Device	48 bit	No
Ethernet	X									
Datapoint Corp.			Vendor Won't Disclose	Coaxial	2.5M bit/sec	255	Bus	\$500	8 bit	No
Archnet	X									

*Carrier Sense Multiple Access with Collision Detection
*Time Division Multiple Access

OW 081

A Cross-Section of Local-Area Network Offerings ...

Local Net Offerings Mounting to Fever Pitch

(Continued from Page 1)

- Limited in distance to a few miles.
- Interconnected by a communications technology (that is, packet switches, bus structure or I/O channels).

Although most agree with Thurber that local-area networks are limited in distance to several miles, some vendors are threatening to take the "local" out of local-area networks by offering systems that span up to 50 miles—further than the distance required by most offices. And some industry analysts even envision local nets at the tail end of the currently popular digital transmission system (DTS) schemes, which provide metropolitan distribution of high-speed digital communications.

Two Standards?

In the area of standards, analysts agree that no single, cast-in-stone standard is likely to emerge for local-area networks. This situation seems to be causing some hesitancy on the part of potential local net buyers.

The IEEE 802 committee, which has been working on the problem, seems destined to recommend both a baseband and a broadband standard. Both baseband and broadband nets use coaxial cable. Baseband networks, such as Xerox Corp.'s Ethernet, use a kind of coaxial cable that carries digital signals over short distances (2,500 meters). Broadband networks like Sytek, Inc.'s Localnet employ coaxial cable which carries radio frequency (RF) transmission up to 50 miles.

Product Spotlight

'Analysts agree that no single, cast-in-stone standard is likely to emerge for local-area networks. This situation seems to be causing some hesitancy on the part of potential local net buyers.'

Baseband nets use a black box or transceiver unit to link devices to the cable. Broadband versions use RF modems. RF modems cost a maximum of \$1,000.

In the case of Ethernet, however, the transceiver, cable and Ethernet controller required to implement the frequently used Xerox 860 distributed DF system cost about \$1,100. But other 8000 series products may be attached to an Ethernet for a minimum of \$250, a Xerox spokesman said.

Fiber-optic cable has also received considerable attention as a potential local network transmission medium. It provides faster throughput than coaxial cable and is less susceptible to electromagnetic interference.

On the negative side, fiber-optic cable is more difficult to splice and tap than coaxial cable, severely restricting the ability to add new nodes.

The long-term viability of baseband local-area networks and Ethernet in particular has been the subject of considerable argument. One recent study predicted total failure for Ethernet [CW, Nov. 23], while another expert said there is ample opportunity for both media to survive and thrive [CW, Nov. 23].

Topology is another fundamental aspect of local-area networks. "The topology behind most of the more recent products appearing in the marketplace for local-area networking is based upon a bus architecture," explained a recent study performed by International Data Corp., an industry research firm in Framingham, Mass. "What this means is the various resource stations, generally through some form of adapter, transceiver or interface unit, are all connected to a common communications bus that provides the backbone for the network."

The bus topology is characterized by the fact that each node can "hear" everything that is put on the bus by any other node.

"In a ring configuration, each station receives transmissions of data from the station to its left and passes the transmission to the station on its right," the study said. All the stations in the network are linked together in a ring or a closed loop.

Each node takes transmissions into local memory where it is treated as a message received if addressed to that particular node. If not, the message is sent on to the next node in the ring.

In a ring configuration, "since each station is an active link in the transmission of data, all stations must be working correctly for the ring to work," the IDC study noted.

Access Schemes

The two network access schemes currently in use are Carrier Sense Multiple Access with Collision Detection (CSMA/CD) and token passing. According to the Computerworld charts including nine vendors, CSMA/CD is the clear-cut leader.

CSMA/CD is a line contention method used on bus-based networks whereby network nodes (dumb terminals, microcomputers, minicomputers, mainframes and so on) listen to determine if another node is already transmitting. This is accomplished by detecting a carrier signal on the line.

If the network is clear, the message is routed onto the bus by the interface in packet form. The interface continues to monitor the transmission in case another node attempts to transmit. If this occurs and the packetized messages collide on the bus, the interface unit stops sending, waits a random period of time and goes through the process again.

With token passing, only one node is allowed to transmit at a time. This is accomplished by passing a "token" around the network which conveys the right to transmit from one node to another. Once a message is completed or a certain time limit exceeded, the token is passed to the next node.

Company Name	Geographical Span	Installed Base	Minimum Distance Between Nodes	Maximum Distance Between Nodes	Vendor Devices Supported	X.25 Gateway	Data	Voice	Video	Availability
Amdax Corp. Cablenet	50 Miles	12	None	None	All RS-232C and RS-449	No	Yes	No	No	90 Days
The Desteck Group Deenet	4 Miles	0	None	Undetermined	All RS-232C or Centronics IO Port	No	Yes	No	No	February
Interactive Systems/3M, Inc. Videodata	50 Miles	Approximately 250	None	None	All RS-232C	No	Yes	Yes	Yes	90 Days
Network Systems Corp. Hyperchannel	5,000 Feet	902	None	5,000 Feet	Most Major Mainframes	No	Yes	No	No	60 to 90 Days
Proteon Associates, Inc. Pronet	15 Miles	10	None	300 Meters	DEC (Unibus and Qbus)	No	Yes	No	No	90 Days
Sytek, Inc. Localnet Model 20 Model 40	50 Kilometers	65	None	50 Kilometers	All RS-232C	No	Yes	No	No	60 Days
Ungermann Bass, Inc. Net/One	2,500 Meters	60	None	2.5 Kilometers	Must Meet Ethernet Specifications	No	Yes	No	No	30 to 45 Days
Wang Laboratories, Inc. Wangnet	2 Miles	0	None	2 Miles	All RS-232C and RS-449 (Utility Band) Wang Only (Wang Band)	No	Yes	Yes	Yes	Depends On User Needs
Xerox Corp. Ethernet	2,500 Meters	Number Not Released	None	2.5 Kilometers	Must Meet Ethernet Specifications	No	Yes	No	No	90 Days
Datapoint Corp. Arcnet	4 Miles	2,000	None	None	Datapoint Only	No	Yes	No	No	90 Days

... And Their Major Characteristics

Facts About Vendors, Local Nets in Charts

By Bruce Hoard
CW Staff

Some facts about the local-area network vendors and products included in the charts above:

• **Amdax Corp. (Cablenet)** — Cablenet is a broadband bus local network available in two versions that offer 7M- and 14M bit/sec speeds. Its time division multiple-access (TDMA) line access methodology sets it apart from the others in this group. With TDMA, data packet collisions on the bus can be avoided through "time slot allocation service," which guarantees a certain number of packets will be reserved.

Amdax Corp., 160 Wilbur Place, Bohemia, N.Y. 11716.

• **Datapoint Corp. (Arcnet)** — The first of two vendor-specific local networks included, Arcnet is a baseband bus that accepts all Datapoint processors with the exception of the Model 1550. The company is close-mouthed on Arcnet's line access method.

Datapoint Corp., 9725 Datapoint Drive, San Antonio, Texas 78284.

• **The Desteck Group (Deenet)** — The most recent offering of any listed in the charts, Deenet's claim to fame is its reported versatility. The local network is said to support a variety of interconnect media including baseband, broadband, fiber optic and telephone lines. The company is currently in the process of implementing its first beta test site.

The Desteck Group, 1923 Landings Drive, Mountain View, Calif. 94043.

• **Interactive Systems/3M, Inc. (Videodata)** — Another broadband bus system, Videodata features a proprietary line access method in which each node is dedicated to a particular frequency. Although its vendor claims an audio transmission ability, it also admits 99% of the models sold for the network are data models.

Interactive Systems/3M, Inc., 3980 Varsity Drive, Ann Arbor, Mich. 48104.

• **Network Systems Corp. (Hyperchannel)** — The veteran in this listing with an installed base of 902 adapters at 135 sites, Hyperchannel is a baseband bus network designed to tie together mainframe computers. It is also distinguished by its 50M bit/sec transmission speed and a monthly service charge on software.

Network Systems Corp., 7600 Boone Ave. N., Brooklyn Park, Minn. 55007.

• **Proteon Associates, Inc. (Pronet)** — Pronet is another vendor-specific product, relying on Unibus and Q-bus connections to Digital Equipment Corp. PDP-11 and VAX-11 computers. It is also the only ring topology product included in this overview. Proteon pointed out that it is a star-shaped logical ring that remains in operation in the event any single node goes down.

Proteon Associates, Inc., 24 Crescent St., Waltham, Mass. 02154.

• **Sytek, Inc. (Localnet)** — There are two versions of Sytek's bus-based broadband network. The Model 20 uses frequency agile modems that can switch among 120 channels, each of which features a data rate of 128K bit/sec. The faster 2M bit/sec Model 40 is designed to link mainframes. Right now there are interfaces to DEC, IBM and a few others.

Sytek, Inc., 1153 Borden Drive, Sunnyvale, Calif. 94086.

• **Ungermann Bass, Inc. (Net/One)** — Ungermann Bass acts as an OEM of Ethernet components to Xerox, and Net/One is a nearly identical twin to the baseband bus Ethernet.

Ungermann Bass, Inc., 2530 Mission College Blvd., Santa Clara, Calif. 95050.

• **Wang Laboratories, Inc. (Wangnet)** — Wang has added a new twist to the local network scene by providing three "bands" on its overall broadband bus. The Interconnect Band links non-Wang devices at speeds to 64K bit/sec; the Wang Band ties Wang devices together with a 12M bit/sec connection; the Utility Band is allocated for video transmission.

Wang Laboratories, Inc., One Industrial Ave., Lowell, Mass. 01851.

• **Xerox Corp. (Ethernet)** — By far the most publicized of any local-area network, Ethernet is the result of a joint effort by Xerox, DEC and Intel Corp. It has now reached the beta test stage, where it has been well received by at least one user. The 10M bit/sec baseband bus network will either lead Xerox into the promised land of the office or drag it into bankruptcy, depending on whom you listen to.

Xerox Corp., 701 S. Arroyo Blvd., El Segundo, Calif. 90245.

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COMPUTERWORLD
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Report Charges HHS Only Scratches Surface

WASHINGTON, D.C. — Although computer matching projects have enabled the Health and Human Services (HHS) Department to detect millions of dollars of abuse and fraud in its programs, the dollars returned to the government as a result are merely a drop in the bucket, according to congressional investigators. Last Monday, the same day HHS in-

spector General Richard Kasseow met with the press to trumpet the results of recent HHS computer matches and other anti-fraud activities, a Senate committee submitted a report charging the matches are the department's only concerted effort to eliminate fraud.

No Impact

While not challenging the HHS claims on the value of the matches, the report of the Select Committee on Aging said that overall "there has been no apparent impact by the [inspector general] in effecting program changes to prevent the recurrence of abusive or fraudulent practices" in the department's payments programs.

The report, in effect, backed claims by opponents of computer matching projects, who argue the matches garner much media attention while masking the fact that little has been done to correct inherent government program mismanagement.

The Senate report said there are no reliable estimates for the current amount of fraud, waste and abuse afflicting HHS operations, but noted the most recent estimate, for fiscal 1977, was for a minimum of between \$6.3 billion and \$7.4 billion. By all reports, the study added, the figure has increased over the intervening years.

In comparison, misapplied HHS dollars pinpointed by the recent computer matches — which the committee report called the only "serious

focused effort to find and eliminate fraudulent activities" — are in the range of tens of millions of dollars, the study said.

Committee Chairman John Heinz (R-Pa.) called the situation "intolerable" and "unconscionable." Commenting on the performance of the HHS Inspector General's Office, Heinz explained that the office's efforts have been fragmented and ineffective.

"The message that has been given those who abuse the system is clear," he said. "The public purse is open and easy, the bureaucracy too ponderous and passive to pursue. The federal government continues to squander billions of dollars through its inability to stop this abuse."

Auditors Want Weather Service To Halt System

WASHINGTON, D.C. — Congressional auditors have called for a halt to the development of a DF/telecommunications system on which the National Weather Service has already spent \$100 million over the last seven years.

Originally slated for completion in 1979, the agency's Automation of Field Operations and Services (Afos) project is currently not scheduled to operate until 1984 and has already incurred developmental cost overruns of \$22 million, the General Accounting Office (GAO) said in a recent report.

The GAO said it found "substantial problems in [Afos'] design, operation, maintenance and management." Also, the report said, "several of the design problems are inherent in the system and cannot be resolved short of a complete redesign."

The National Weather Service has implemented Afos in two of its four principal regions and wants to complete the project for as-is operations until a totally new system can be designed and implemented by the end of the decade.

The GAO report recommended that if Afos and successor projects are to proceed, the service must establish a central project management office, develop more effective cost accounting methods, adhere to standard software development practices and "replace completely all Afos software, hardware and telecommunications in developing any new systems."

"Unless the Weather Service resolves these management weaknesses and technical problems," the GAO said, "Afos and the effort to develop a new system face continued difficulties and a risk of total failure."

Boston to Host Apple Festival

BOSTON — Applefest/Boston '82, a series of seminars, educational programs, workshops and exhibits for users of Apple Computer Co. microcomputers, is set for the Hynes Auditorium here May 14-16.

Two hundred booths will display virtually every major Apple product, program and accessory, according to Northeast Exposition, Inc., which will produce the show for the Boston Computer Society.

Applefest/Boston will be the first in a series of regional versions of the show.

More information is available from Northeast Expositions, Inc. at 824 Boylston St., Chestnut Hill, Mass. 02167.

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For Federal Governments

Matching Credited With Saving Millions

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — Federal computer matching projects this year have already pinpointed tens of millions of dollars in uncollected government debt and overpayments made by federal agencies, the President's Council on Integrity and Efficiency reported last week.

Expanded use of computer matching techniques is just one of dozens of projects the council has undertaken, leading to federal savings exceeding \$2 billion in the six-month period ending Sept. 30, the report said.

At a White House press conference on the report last Monday, President

Reagan remarked: "I promised we'd follow every lead, root out every incompetent and prosecute every crook that we found cheating the people of this nation."

The report, which said indictments of persons allegedly defrauding government programs almost doubled in those six months over the previous six months, "only scratches the surface of what has been accomplished" by the council, according to Reagan.

Calling the council's work "a growing deterrent against future abuses," Reagan urged the group to "keep on being as mean as junkyard dogs" in fighting waste and fraud. The 24-member council consists of inspec-

tors general of the major federal agencies plus representatives of key government offices, including the Office of Personnel Management and the departments of Defense and Justice.

Council Chairman Edwin L. Harper, Office of Management and Budget (OMB) deputy director, noting a concerted federal effort to increase computer matching (CW, Sept. 28), said the Veterans Administration has already located 66,000 federal employees who owe the agency more than \$37 million.

By comparing computer tapes of Medicare and Social Security recipients, the Department of Health and

Human Services (HHS) has developed a "death termination interface" that, according to HHS Inspector General Richard P. Kusserow, has identified more than 8,000 deceased persons still on Social Security rolls.

Those persons, Kusserow said, have cost the government between \$40 million and \$100 million at a rate of approximately \$20 million a year. Expanding that match to include files of persons receiving benefits under a Black Lung program has found an additional 1,200 dead persons still in that program. The loss there, he said, is about \$2 million a year for a total loss to date estimated at between \$15 million and \$18 million.

More Indictments

In another example of multiple matches, John V. Graziano, Agriculture Department Inspector General, said the government has obtained 515 indictments in the last six months of persons charged with underreporting income to obtain food stamps.

In Memphis and Nashville, Tenn., approximately 1,600 cases of underreporting have been uncovered, Graziano said. He added that 667 of those persons were also found to be receiving welfare payments, 735 were getting Medicare benefits and 95 were enrolled in yet another FHS program.

Because of the success of the matching program so far, Graziano said, "we are expanding our computer stamping throughout the major food stamp issuance centers in the U.S."

The council's report also outlined several actions under way to strengthen the government's computer management and use of data processing resources to fight fraud including the following:

- OMB recently issued instructions for each agency head to establish and maintain internal control systems for all computer operations.

- A council project team will complete by next March a governmentwide review of payroll systems to determine methods to increase agency efficiency in using and controlling DP resources while minimizing the impact on those resources of legislation and other actions outside the control of the agencies.

- Another team is conducting a survey to identify payroll areas with high vulnerability to fraud, waste and abuse. "The emphasis was placed," the report said, "on internal controls [including computer program maintenance and computer security] and those areas where manual intervention in automated systems can occur."

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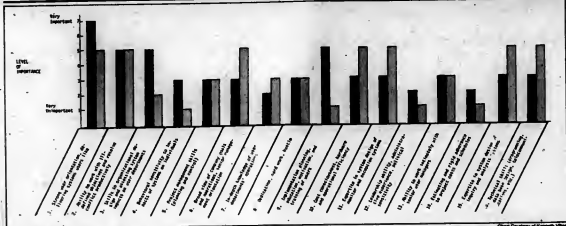
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Correction

In "Software Vendors at Comdex Find Reality Lying Up to Hopes" (CW, Dec. 7), Keith Parsons was incorrectly identified as the president of Phoenix Systems, Inc. Parsons is the president of Structured Systems Group of Oakland, Calif. Bruce McKee is the president of Phoenix Systems, Inc. in Pittsburgh, Pa.



In this chart of systems analyst skills, the black bar represents the DP manager's priority and the grey bar represents the systems analyst's priority.

DPers Advised to Cultivate Behavioral Skills

By Marguerite Zientara
CW Staff

BOSTON — DP professionals must concentrate on behavioral not technical skills when introducing new technology into a business environment.

Speaking here last week at Data Training '81 on "New Roles and Skills for DP Professionals," Kenneth L. Villard, a consultant with the Federal Reserve Bank of Cleveland, advised those charged with introduc-

ing conversions to cultivate the skills of contracting, conflict management and consulting.

CW at Training '81

Not only will such skills benefit DP professionals now, but "as future technology becomes more decentral-

ized and high-level applications languages become more user-friendly," Villard said, "the typical DP department will cease being a line function and become a true staff support function."

"As this shift occurs over the next four or five years," he continued, "the role of the DP professional will move from being merely a technological provider to being much more of a process consultant concerned with business planning."

In talking with users about the kinds of failings users now see in DP professionals, Villard pinpointed the following problem areas:

- Giving timely responses to requests.
- Giving quick responses to "simple" requests.
- Communicating about potential problem areas.
- Communicating the existence of relevant data and programs.
- Explaining reasons for delays.
- Giving reasons and justification for decisions on program design or design enhancements.
- Lack of "fellowship" and common purpose with the user.
- Inability to make the users comfortable with the new system and train them on it.
- Reluctance or inability to champion user needs and negotiate effectively with user management.

Perhaps the most important point is that concerning a "fellowship" which must be established "so users will know you're not going to leave them in the lurch and to assuage their fears about learning the new system," Villard said.

If a gulf exists instead of a fellowship, users will get around using the central DP department's resources by resorting to such things as hiring contract programmers or installing microcomputers, he said.

Another part of the DP/user interface problem stems from the confusion that frequently exists between the system analyst and the manager about what the knowledge and skill priorities of the analyst are, according to Villard.

As illustrated in the accompanying chart, there are several areas of great discrepancy, most notably in "skills

in organizational design and assessing system impacts on user departments" and "implementation, planning, education, motivation and training of users."

In general, managers see analysts' skill priorities as being more user-oriented than analysts, who have a higher regard for technical competency. While the reason for the discrepancy is partially the analysts' lack of feedback from user departments — which the manager does get — a more likely explanation is "the reward system of the typical DP department," according to Villard.

"Although managers may believe that the management of change, communication with the user and teaching skills are important, most managers would also admit that what analysts get rewarded for has little to do with these skill areas."

Typically, DPers are rewarded for building efficient, user-friendly systems quickly, Villard noted.

With the projected shift from DP line function to staff support function, Villard said, DP professionals will need the following consulting skills:

- Determining who the real client is.
- Identifying people critical to the acceptance of the system.
- Moving the DP department from a passive or dependent position to taking ownership of the system.
- Getting the user to envision what is possible in the system.
- Freeing users to ask "dumb" questions, admit ignorance and make mistakes.
- Establishing criteria for evaluating the success of the system.

In addition, the following contracting skills will be necessary:

- Determining what the client expects and wants from DP.
- Establishing responsibility for each step of implementation.
- Getting professional needs met by the client.
- Getting personal needs met by the client.
- Establishing and agreeing on procedures, steps and time frames.
- Establishing periodic feedback and critique of the product or process.

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Editor Sees DP as Foremost Skill in Late '80s

"Exploit the inevitable."

— Japanese proverb

By Marguerite Zientars
CW Staff

BOSTON — By the late 1980s, electronics will rival the automobile, steel and chemical industries, and data processing will be the first and foremost skill of this decade.

Millions of American workers will have to be "retreaded" or retrained because of automation, and homes will be filled with video and communications hookups that allow workers to live as far from city centers as they desire. That is the vision of David Snyder, Life-Styles editor of *The Futurist* magazine, speaking at Data Training '81 on "America in the '80s." Well-attended in spite of a surprise storm that dumped two feet of snow here, Snyder's keynote session was entertaining and revealing.

Citing statistics — largely from the *Statistical Abstract of the U.S. 1980* — indicating that marriage and birth rates are going up, the white-collar sector of the work force is increasing, blue-collar workers are diminishing in number, the work force is moving toward a 50:50 ratio of male and female workers and levels of education are continually rising. Snyder noted that the post-World War II era and the present are "two totally different societies. The future evolves in an orderly manner out of the realities of the past, filtered and shaped by the decisions of the present," Snyder contended. In order to be prepared and able to "exploit the inevitable," one should realize the forces at work.

Largest Growth Industry

After weathering an anticipated "economic roller coaster ride of severe drop" over the next 18 months, we will be well into the "largest growth industry ever in this country," Snyder predicted. Until now, we have been in the "steam engine" phase of computing, but that will soon evolve into the domination of the economy by information work, he said.

Besides social indicators, there are "indicators of intent" or attitude surveys that indicate future directions, Snyder said. It has been reported that in 1965 a "steady income" was the most important job characteristic for 46% of U.S. workers, while only 21% felt "meaningful work with a sense of accomplishment" was the most important.

By 1977, only 20% were most concerned with income while 43% cited a meaning-

ful job as the most important factor. Currently, that figure is more than 50%, he said.

Blue-collar workers, too, have changed their attitudes similarly, as follows: 1965, 52% income, 13% meaning; 1977, 30% income, 26% meaning.

Among white-collar workers, the change has been from 37% income and 32% meaning in 1965 to 17% income and 53% meaning in

1977, according to Snyder.

The figures reflect a fundamental change in atti-

tuudes," he stressed. And how well is work satisfying the workers? "Not very well," Snyder said.

When broken down by age, race and gender, it becomes

evident that "not one group is satisfied, except for those workers with graduate-level

educations." The only groups that are actually "happy" are farmers and the self-employed, he added.

Those with college degrees experienced the sharpest de-

cline in job satisfaction between 1973 and 1977 of any other group, because the World War II baby boom — that peaked in 1958 — glutted the market with talent that could not always be fully utilized. Now, however, because of high marriage and birth rates, entry-level personnel are dwindling in number and therefore "have greater leverage" than they did in the 1970s.

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Some Firms Want to Ditch Them Consultant: Hatred Toward DPsers Worsening

By Tom Henkel
CW Staff

BOSTON — End users hate DPsers. Management is suspicious of a department that wields so much power, yet is constantly accused of being unresponsive and sluggish in handling requests. And the situation is getting worse.

Those were some opinions of George Henderson, senior education consultant with

Data Training '81 here last week. Henderson claims the relationship between the DP

CW at Training '81

the Toronto-based consulting firm of Art Benjamin Associates, Ltd., who spoke at

department and the rest of the company is so bad that some firms are talking about firing the entire DP group and starting anew.

Other DP departments are so bogged down with requests for information and services that they are up to eight years behind schedule in some projects, he maintained. By the time the technicians deliver an applications package or program, it is so out-of-date that the DP department spends more time updating it than it originally took to develop. So the already backlogged DP area slips further behind schedule.

The solution, Henderson said, is to teach end users to code programs to handle the more basic information retrieval procedures. To aid in that effort, some members of the DP department — and with training, the end users themselves — can teach untrained users to program and provide technical assistance when necessary.

Information Center

The concept is called the information center, and it originally came from IBM about eight years ago.

It begins with a company setting aside an area that is reasonably close to the DP department, while remaining close enough to end users to make it convenient. This information center is equipped with workstations and is usually manned by an attendant who can answer questions and provide help.

Workers are trained in the fundamental concepts of programming, usually in user-friendly languages, then turned loose to create programs. If started on a small scale and allowed to develop over time, Henderson said, firms can avoid total chaos and build a strong training tool that will give end users faster turnaround on information requests while removing some burdens from the DP department.

The information center is not a programming house, Henderson emphasized. If information center personnel actually write programs for end users, the facility loses all its effectiveness, he stated. The information center should only provide actual coding on a fee basis, he continued, suggesting that

the fee be sufficiently high to force users to develop their own code. He also recommended that each department be charged a fee for using the center.

However, training users to program should be a free service. And free training means the center's personnel can decide who is to receive training, he said.

Henderson also listed some potential problems with the information center concept. The concept end users have for DPsers runs deep, Henderson maintained, and bringing the two groups together for a training session is often difficult. In addition, users sometimes fear the technology involved.

One possible solution is to

locate the information center far enough away from technical personnel so the user does not have to trail through halls filled with programmers. In addition, the information center should offer an on-site trainer to help with debugging, Henderson said.

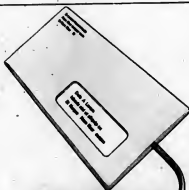
Another possible problem is the quality of code the end users generate. Inefficient or undocumented code may come back to haunt the firm, he warned.

The bottom line, he contended, is that the information center makes end users more aware of the problems and technology involved with data processing and resolves some of the DP department's work load.

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DP Trainer Outlines Ways to Attack Turnover

By Marguerite Zientara

CW Staff

BOSTON — "To retain — train" was the message from Terry Ebert of Comp Ed Technical Corp. at the second annual Data Training conference here last week.

In his "Turnover Reduction — The Role of the DP Trainer" session, Comp Ed's senior training specialist/regional administrator outlined three major responsibilities of management to support healthy, low-turnover DP groups.

As part of the Data Training Newspaper-sponsored conference, Ebert senior cited Department of Labor statistics indicating the number of DPs in 1974 (more than 600,000), in 1979 (more than a million) and the projected total by 1985 (1,700,000).

"Rapid growth means hiring problems," Ebert said, citing a *Computerworld* survey that indicated more than 60% of the managers surveyed were operating below staffing levels. A separate study of 245 companies showed an average turnover rate of 20% to 30%, he added.

Turnover is expensive on several levels, because managers must divert senior staff to train beginners, documentation becomes a problem and job load pressures increase. "The pressures become more than annoying," Ebert said, "because you can't do the work as you'd like and the situation can cause those left behind to leave."

Three Responsibilities

The first of the three responsibilities of managers is to provide sufficient and appropriate training for staffs. "Programmers and systems analysts want to be state-of-the-art and when their training is not essential they see it as a palliative gesture," Ebert said, warning, "Training must be job-relevant or there will be resentment."

In addition, one "can't depend on academia for training, because academic training tends to be too theoretical and experimental," Ebert said. Therefore, in-house training is the most important avenue to success, although corporate spending levels earmarked for training are down.

Managers can use training to develop applications knowledge and thereby increase organizational loyalty in a group that traditionally has more loyalty to the profession than the organization. Furthermore, cross-training across shifts and sections can be a safety valve for managers in the face of turnover.

In some cases, outside training vendors can be more cost-effective, because they often concentrate on a single technical aspect and the "student" can immediately use his training upon his return.

The second area of attention for managers is career development and job satisfaction, Ebert said. According to a study by author/consultant Daniel J. Couger, DPs have the highest need for personal accomplishment, developing new skills, and stimulation and challenge of the following groups: salespeople; other professionals; service, managerial and clerical workers; and those in structural work. Conversely, DPs have the lowest need for social inter-

action.

Ebert also cited five ingredients "critical" to morale: skill variety, task definition, task significance, task autonomy and feedback.

Workers who feel they are locked into a dead-end slot with no chance for advancement will eventually leave, Ebert said. They need a chance to grow within an organization and to develop new skills.

He cited Manufacturers Hanover Trust's (MHT) internal mobility plan, which he reported has had good results in moving people from strictly DP jobs to management, an area where DPs' least liked social skills are the most important.

In promoting solely on the basis of merit, MHT gives its workers the op-

tion of accepting the promotion or not, with no stigma attached to a refusal, Ebert said.

DPs should not be expected to

CW at Training '81

make the move to management if they don't want to. "In every organization there are workers who don't want to move anywhere; they think of their job as a hobby, almost. These people are very important and they should be able to remain where they are without being seen as failures," Ebert recommended. "They

should be encouraged to expand their skills within their jobs."

The third area managers must address is that of organizational climate, Ebert said, citing a company he encountered that had a very poor attitude toward its DP personnel. The firm, which had a 90% turnover rate, according to Ebert, grouped DPs in the "support" category (which included secretarial help), as differentiated from management. In addition, at one point, a supervisor referred to the programmers as "my boys," an extremely condescending term, Ebert said.

With training budgets down, Ebert concluded, reduced turnover would graphically illustrate the cost-effectiveness of training.

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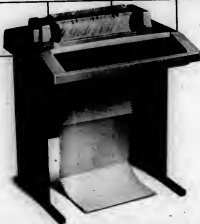
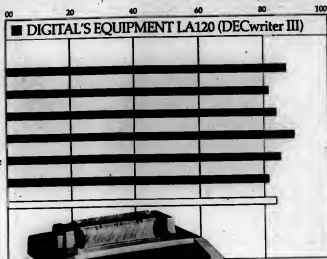
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Postal Commission Suspends Ecom Inquiry

By Phil Hirsch

CW Washington Bureau
WASHINGTON, D.C. — The U.S. Postal Rate Commission has suspended its latest inquiry into the Postal Service's Electronic Computer-Originated Mail (Ecom) because the post office has refused to supply requested market/cost information about the proposed service.

Last week, as Ecom's projected Jan. 4 start-up date drew nearer, rumors continued to circulate that prospective competitors would try to prevent Ecom from being launched by going to court and asking for a restraining order. Graphnet, Inc. and GTE/Telnet Communications Corp. were mentioned most often as likely petitioners.

One reason they and other vendors oppose Ecom is because they reportedly fear the Postal Service wants to transmit Ecom messages from the sender to the receiving post office — officially, the serving post office

(SPO) — as well as deliver them. In the scheme initially approved by the Postal Rate Commission late in 1979, commercial carriers were to supply transmission; since then, Postmaster General William Bolger has endorsed this arrangement over and over.

So far, four commercial carriers have contracted with the Postal Service to transmit Ecom messages and three others are considering whether to do so, Bolger recently reported to a House of Representatives Postal Affairs Subcommittee.

Fivefold Difference

However, according to the Postal Rate Commission, the system the Postal Service now plans to deploy "appears to differ significantly" from

the one approved initially. Based on analysis of an Ecom system development contract the Postal Service signed with RCA last January, the Postal Rate Commission reported, Ecom now appears to require a capital investment of \$38.6 million, "roughly fivefold greater than" the original estimate.

One question the commission almost certainly would have asked if its inquiry had not been suspended was why the Postal Service has not raised its charges for Ecom service accordingly. If and when the service begins on Jan. 4, users will pay 30 cents for a one-page message. This price was originally fixed late in 1979, based on capital costs of \$7.4 million.

"The material available to us indicates that the RCA system is designed to omit telecommunications common carriers as necessary intermediaries between customers as the SPOs," the Postal Rate Commission added.

It also said that the RCA contract "appears to require manual operation of SPOs and internal networking of SPOs via Express Mail." These design features were "unmentioned" in the original design. Results: the actual speed of delivery of Ecom messages appears to be "significantly slower" than originally planned.

Collectively, the changes "appear to have a major impact" on Ecom service quality and costs, the commission said.

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AT&T '82 Rate Hikes Reviewed by Users

WASHINGTON, D.C. — Telecommunications users groups were reviewing AT&T's latest rate increase proposal last week — 4.1% for Wats, 1.6% for private-line service and 1.5% for long-distance calls.

All three increases are scheduled to become effective March 3. They follow in the wake of two increases earlier this year which raised charges for Wats 10.5%, for private-line service 35% and for Message Toll Service 16.5%.

The proposed tariff eliminates higher rates for operator-assisted calls. Time charges for such calls would be the same as for dialed calls, but the customer would pay a surcharge. This scheme would reduce some rates, AT&T said. For example, credit card calls reportedly would cost 13% less, on the average.

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Cigarette Maker's Vans Take Survey in Transit

By Jeffrey Beeler

CW West Coast Bureau

SAN JOSE, Calif. — The sponsor of an ongoing public opinion survey recently expanded the scope of its operations with the acquisition of three mobile computing centers now making the rounds of some of the largest cities in the U.S.

Each of the centers consists of a 30-foot motorized van and houses a customized hardware configuration that records the responses to public opinion surveys, tabulates the results and transmits them to a central site for final processing.

Every fortnight, the vans pay a week-long visit to a different popula-

tion center, where they position themselves at strategic locations, such as downtown intersections and major shopping malls. There, between 8 a.m. and 6 p.m., as many as 450 passersby a day randomly enter the vans and answer a 10-question survey aimed at gauging the respondents' views on a variety of topical issues and subjects ranging from the economy to entertainment, from politics to sports.

The surveys, which are conducted and answered entirely through on-line CRT terminals, use exactly the same questions as a nationwide telephone poll sponsored every two weeks by the makers of Merit ciga-

rettes, which also dispatched the roving computing centers. The sponsor reportedly sees the three vehicles as a valuable adjunct to its telephone public-opinion poll, known as the Merit Report.

During a typical week, the telephone survey samples the opinions of some 1,200 adults throughout the continental U.S. The mobile computing centers, by contrast, are said to attract a total of more than 5,000 respondents during an average month.

In Silicon Valley, Calif., where one of the three vans made its first local appearance last Tuesday, an estimated 150 to 200 men and women on the street were expected to participate in the public-opinion survey each day.

Questions Formulated

The questions in the public-opinion polls are formulated by Audits & Surveys, Inc., a New York-based research outfit, and are transmitted every other week over telephone lines to the three mobile computing centers in the field. Inside each van, the questions are received by two Digital Equipment Corp. PDP-11/23s and are stored in dual DEC RK02 floppy disk systems.

Later, as the questions appear individually on the display screens of DEC VT100 CRT terminals, respondents enter their survey answers by pressing the appropriate buttons on a specially designed keyboard. Three VT100s are installed in each van.

The participants' answers are auto-

matically printed on one of three DEC LA120 printers and, at the same time, are stored cumulatively on floppy disk. Each night, the accumulated survey results are transferred to a second disk for backup, according to coach crew supervisor Mark Hullit.

At the end of each survey period, the vans pull up to the nearest phone booth, attach the receiver to a modem with an acoustic coupler and transmit their accumulated responses over Dectet to a PDP-11/23 at Audits & Surveys' headquarters. A typical transmission takes four to 15 minutes.

After being processed and summarized, the survey results are converted to their final form and are released to print and broadcast media throughout the U.S.

When the polling cycle begins anew, the vans again pull up to any phone booth, connect the receiver to an acoustic coupler and receive the next batch of 10 survey questions from the PDP-11/23 in New York. Because all the questions are transmitted electronically, the pollsters can update their surveys at a moment's notice and can insert queries about late-breaking news items, Hullit said.

Each mobile computing center samples public opinion for a week at a time. Another week is spent processing and tabulating the results locally, and then the whole process is repeated in a different city.



Merit Report Survey Van

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Raises Programmer Productivity

Prof Says Software Engineering Pays Off in End

By Brad Schultz
C New York Bureau

IRVINE, Calif. — Software engineering is an elusive subject to teach, but figures critically in whether computing pays off, a leading researcher said recently.

Prof. Peter Freeman said "you have to have done [software engineering] before you can teach it," but hardly anyone on computer science faculties in the U.S. has done it. Freeman did it on a leave of absence from the University of California at Irvine's (UCI) information and computer science department, but that was a few years ago.

Although he has authored many papers and one of the best known texts on software engineering, Freeman acknowledged in a recent interview here that his research and teaching obligations leave little time for observing and employing such

techniques in the field. "A synergistic combination of management and technical concepts," software engineering concerns itself with both the definition of software development objectives and the optimization of approaches toward these objectives.

Improved Productivity

Software engineers can raise programmer productivity and improve the programming team's responsiveness to end-user needs, Freeman added. Standard tools in software engineering include design languages, which allow end users to express in clear terms what they want software to do.

The Institute of Electrical and Electronics Engineers' Computer Society has circulated recommended curricula for academic programs in software engineering. In Freeman's view, the subject should be taught as a require-

ment for graduation in computer science rather than as a discipline in its own right.

Courses in software engineering would especially benefit students with interest in large-scale software development, he said.

Current Research

Freeman's current research interests include "reusable software engineering," which aims at developing software tools that can be used in more than one design project. Software developers typically do not reuse program designs, the computer scientist explained, and may needlessly "reinvent the wheel" to complete a project.

With his UCI colleagues, Freeman wrote a technical report on reusable software engineering that lists several examples of software tools that can be reused at present:

- A subroutine used to build and initialize a certain type of data table.
- A mathematical subroutine package featured with a language processor, usable by anyone who knows the language.
- A general ledger package in Basic that runs under a particular vendor's operating system, is sold by a particular software house, fits many types of businesses and supports different hardware configurations that drive the same operating system.

• A system generator that adapts an operating system to a specific configuration, built by the vendor that produced the operating system and usable by systems programmers for certain hardware under a certain operating system.

• "A language system . . . built in itself or some intermediate language that can be implemented on a new piece of hardware by writing a very small subset of the total system in the language of the new machine."

In the Future

In the future, Freeman and his collaborators said they would like to see:

- A general-purpose table builder — one that is simple to use and forces no major execution or space penalties when the tables it builds are used — usable by any programmer in any language.
 - A set of software components, used to construct a large system, which can be reshuffled to construct another large system.
- According to Freeman, software engineering is bearing fruit at a time when computer science (an essentially theoretical discipline) must address applications more in order to advance itself, while information systems (an applied discipline, also known as DP) must address theory more in order to advance itself.

Tech Law Focus of New Report

LOS ANGELES — Law & Technology Press here has started a monthly research report on computer and telecommunications law.

"The Scott Report" is written by Michael D. Scott, editor-in-chief of the *Computer/Law Journal* and executive director for the Center for Computer/Law. The 16-page monthly will include topics such as the Computer Software Copyright Act, the

Data General Corp. antitrust litigation, pending federal computer crime legislation and deregulation of telecommunications, among others.

Subscriptions are \$147/year in North America and \$168/year elsewhere. Sample copies and subscription information are available from Law & Technology Press, Suite 211, 3500 S. Figueroa St., Los Angeles, Calif. 90007.



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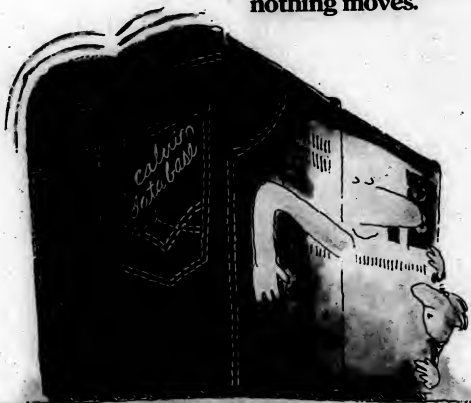
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User Finds Timely Answer for Financial Clients

PARAMUS, N.J. — A company here that acts as a liaison between the consumer or company that needs financing and the bank was searching for a new way to produce reports on a timely basis. The solution for Yegen Associates, Inc. was a general ledger software package.

Processing the requests of so many individual companies was a difficult and time-consuming process, a company representative recalled. Each company has its own unique processing environment and information requirements and a financial information system was not considered a necessity until five years ago when new management took over the corporation.

According to Ken MacLeod, Yegen Associates' senior vice-president, "The previous management had been with the company since its inception. They ran the company on instinct because they grew up with it. The new management came from an environment that felt timely and accurate information was vital. We weren't used to operating any other way and didn't want to."

After reviewing a number of systems and talking with general ledger users, Yegen Associates purchased the Management Science America, Inc. (MSA) General Ledger System. It was installed on March 1, 1978.

Implementing System

"We implemented the system in three months," MacLeod said, "and didn't need to run parallel. All the companies, except for Integrity, our largest insurance company, were processed live by June 1."

"Even though the 25 companies differed in terms of their chart of accounts and their particular modes of business," he continued, "most of them were service/financial-oriented. We adopted a standard chart of accounts, recognizing that we would want to produce consolidated reports."

"Companies that didn't fit a particular numbering scheme or that required unique accounts were assigned a separate numbering

scheme within the uniform chart. Once that was developed, we established various account/center relationships."

"We developed a grid, just as the MSA documentation suggests," Joe Eisenman, assistant vice-president and director of all outside purchased systems, added. "One grid for each company on a center basis."

Yegen began developing

and producing custom reports soon after the system was implemented. One of Yegen's most important custom reports is its commission statement, a report that is used by internal management and field personnel throughout the organization.

"It used to take up to nine months to get the commission statement out to the field," Eisenman recalled. "Now we can produce the

statement and send it to the field personnel in 45 days."

With the new system, each person in the field is assigned a field office number or cost center number. A profit and loss statement is generated based on the structure of the chart of accounts for each individual within the particular company. The bottom line from that statement is used as the commission base.

Reconciliation reports within the general ledger also aid in keeping discrepancy situations to a minimum.

Since Jan. 15, 1980, Yegen has used MSA's payroll system to pay the approximately 1,300 employees in 40 states on a semi-monthly cycle. The special report generator is designed to generate a number of personnel reports previously prepared manually.

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Wang 2200SVP Scores High on Benchmark Tests

By Hilal Segal

Showing the same excellent performance noted on other Wang Laboratories, Inc. systems, the 2200SVP turned in favorable times in benchmark tests conducted for the Association of Computer Users (ACU).

The 2200SVP is the third system, made by Wang Laboratories, Lowell, Mass., that we have tested during the various benchmark series. Others were the 2200VP, tested in Series 2, and the 2200MVP, in Series 3.

Like its family members, the lower priced 2200SVP did well in the tests. Its number-crunching speed was especially outstanding, as was performance in the scientific/engineering test, where the 2200SVP turned in a time of 2 min. 13.3 sec. In this test, the system is given a set of 50 linear equations with 50 unknowns, which it solves using the Gauss-Jordan method of elimination.

Fast Test Times

The accounts receivable test, which uses both processor and disk storage operations, is a more overall test of the computer's capabilities. Here, the time of 2 min. 23.0 sec was among the fastest we have seen for a system tested using floppy disk storage.

Some systems in this price range now offer hard disk storage, but for better comparability we are reporting the floppy-disk-based times in the Scorebox. Hard disk times, where applicable, are available in the full reports. The 2200SVP, when tested with its 2M-char. hard disk, ran the test in 29.1 sec.

Wang has enhanced the 2200 series of computers with several new features. These have removed several limits to expandability of the 2200SVP, making it an even more attractive buy.

The system as tested included a CRT and keyboard, a separate unit with processor, 32K char. of memory, a 1M-char. floppy and a 2M-char. hard disk; a dot matrix printer that works at 125 char./sec; and the Basic-2 language. The total price was \$14,600. Wang also offers leasing and rental plans.

The basic unit comes with 32K-char. memory and this was sufficient for the tests. The operating system and Basic language reside in a separate control memory. In addition, the system uses space compression techniques and allows programs passing between programs, easing memory restrictions.

New Announcements

Expansion to 64K char. was available at the time the tests were run, but since then Wang has announced a group of improvements for the entire 2200 series of computers. Among these are a new top capacity of 128K char. for the 2200SVP, plus an optional 8M-char. Winchester hard disk drive.

The CRT terminal supplied with the system, Model 22360E, offers user-programmable function keys and an alternate character set for simple graphics.

At the time the system was tested, it was available only in a single-user

SCOREBOX

System: Wang 2200SVP
Current Price: \$14,600

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Cromemco System 720	14:52.8	2:48.0
Texas Instruments 771	22:05.4	3:38.1
Vector Graphic System B	19:30.0	5:56.5
Decstation 78	7:55.7	4:21.5
Radio Shack TRS-80 Model II	20:00.7	3:38.6
Apple II+	21:11.0	6:17.4
Digital Microsystems DSC-2	13:24.9	3:26.8
Ohio Scientific C3-A	12:10.7	15:49.3
Alpha Micro AM-1011	5:18.3	3:25.3
Delta General CS/10 Model C1	58:21.0	* 6.4
SD Systems SD-200	17:42.8	6:16.4
Wang 2200SVP	2:13.3	2:23.0
Altos ACS8000-15		to be covered
NEC Astra 205		future issues
IBM 5120		

* Tested with hard surface disk rather than floppy. C-3 time was 2:40.3.

version. Now, perhaps the most significant of the enhancements Wang

tional line-oriented nature rather than taking more advantage of the

This is the 43rd in a series of articles giving the highlights of benchmark tests conducted on popular small computer systems. The full reports were originally published by the Association of Computer Users, a 4,000-member nonprofit organization.

has made is that up to 16 tasks can be going on in the 2200SVP at once. These can be used either by a single user or by multiple users at remote terminals. The new feature, called multiprocessing, can be added to existing systems.

Cobol has been added to Basic for this system, allowing more of the existing business software written in that language to be adapted for use. However, all benchmark testing was done in Basic.

The interactive Basic makes the operating system transparent to the user, although there are some system commands such as CLEAR, HALT and RUN. The language provides a number of advanced features, such as MAT operations, PRINT USING, matrix operations for certain math problems and extensive error trapping. Our benchmark consultants noted that the file-handling capabilities are a bit awkward to use. For example, a modified program cannot be easily saved under its old name; to do this, one must first scratch the old program and its associated data files.

The program editor uses special editing keys and has other features for convenience, but is of conven-

screen.

Wang has announced several new software aids, but the company leaves much programming to outside

sources. The Wang packages include business accounting software, word processing and a software development tool called Idea. Newly released is Datamerge, said to be the first module in a data management utility, Powerful Resource for Information and Systems Management (Prism).

Dictionary-Based Software

Prism is said to be an integrated, dictionary-based software system that will control all phases of data management. It will handle functions such as data entry, selection and processing of data according to user-specified conditions and display or printing of results in a variety of formats.

Most software for business users of the 2200SVP will come from vendors that develop applications programs and market complete, turnkey systems. Wang has a long list of approved vendors that offer business engineering software along with Wang hardware.

For the user survey portion of the report, our consultants (the University of Colorado, Business Research Division) contacted 11 users of the 2200SVP, using names supplied by the manufacturer. Most of the users had third-party software, but nearly half were also programming in-house.

Documentation was generally praised; training, however, got a spotty reaction in our limited survey. When customers listed their reasons for choosing the 2200SVP, they mentioned ease of programming, speed, available third-party software and power.

The hardware was given good marks for dependability, while service was rated "fine" to "excellent."

Hilal Segal is president of the Association of Computer Users, a nonprofit association with members in the U.S., Canada and several other foreign countries. A package of information about the Association of Computer Users is available from the group at P.O. Box 9003, Boulder, Colo. 80301.



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Managers on the Move

JOHN A. McMANUS has been appointed assistant vice-president in the accounting department of Metropolitan Life Insurance Co. in New York.

McManus joined Metropolitan in 1968 as a computer programmer in the electronic installations department, advanced to systems analyst in 1971, to project manager in 1974 and to manager on Aug. 1, 1978. In his new position McManus is responsible for identifying and implementing all electronic data processing systems used in the accounting department.

CHARLES G. BOSTWICK has been named director of planning and administration at Mervyn's Department

Stores, based in Hayward, Calif., and JERALD J. WILSON has been appointed director of data base administration at that company.

Bostwick was formerly manager of merchandise systems/programming for the 82-store chain. He came to Mervyn's in 1974 after several years at Singer Business Machines. He is a graduate of California State University at Hayward.

Wilson is the former director of planning and administration in the company's management information services group.

He joined Mervyn's in 1980 and was previously with John Breuninger Co. He graduated from Golden Gate University.

Comnet '82 Set for January; 80 Sessions, 100 Vendors

ATLANTA — Communication Networks (Comnet '82) will feature 80 sessions and an exhibit by nearly 100 vendors when it is held here Jan. 12-15 by the Conference Management Co.

Keynote speaker will be Dr. Joseph A. Boyd, chief executive officer of Harris Corp., who will discuss high-technology solutions through telecommunications cost containment and new applications. Boyd will also describe how data- and aerospace-oriented vendors are providing the high-bandwidth capability needed for volume voice data and office communications.

"Restructuring American Telecom-

munications: For Whom the Bell Tolls," will be the subject of the annual "town meeting" on telecommunications policy. Chaired by Richard E. Wiley, conference general chairman and former Federal Communications Commission chairman, the panel will offer opinions on future developments.

Dixon Doll to Speak

The panel on "Productivity Improvements from Integrated Digital Networks" will feature Dr. Dixon Doll, president of the DMW Group and Prof. Leonard Kleinrock from the University of California at Los Angeles.

The office of the future panel will discuss "Beyond Electronic Mail: The Office of 1990." Among its participants will be Dr. Lawrence Gould, president of Macom Net, Inc. and Amy Wohl, president of Advanced Office Concepts Corp. Registration fees range from \$245 to \$395.

Registration forms are available by writing Communication Network, Conference Management Co., P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

IWP to Celebrate 10th Anniversary

WILLOW GROVE, Pa. — The International Information/Word Processing Association (IWP) will celebrate its 10th anniversary at the organization's spring symposium Feb. 2-4 at the Disneyland Hotel, Anaheim, Calif.

IWP changed its name from the International Word Processing Association in June. It counts 13,500 members in 100 chapters around the world.

IWP is located at 1015 N. York Road, Willow Grove, Pa. 19090.

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PC even has a special department called PC-Lab™ to evaluate hardware, software and supplies that can be used with IBM Personal Computers—helping you choose those that best suit your needs. When IBM introduced its Personal Computer, an IBM executive said, "If you could choose one word to describe this system, it would be 'quality.'" That will also be the guiding light for PC magazine—in its easy-to-understand writing, its colorful design, and particularly in its devotion to you, the reader.

PC's premiere issue will be out in January, and no one who wants to know more about IBM Personal Computers should be without it—or any of the informative issues to follow. So if you're interested in IBM Personal Computers, be a PC Charter Subscriber.

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PC wants to know who's interested in the new IBM "PC," so we're giving one away to help give public interest. You could be the one to win our prize—an IBM Personal Computer system unit (16K) with keyboard and color/graphics monitor adapter. (Available IBM products of equal value may be substituted if you prefer.)

You don't have to subscribe to enter our Giveaway drawing. Just fill out and mail the "Giveaway" end of the double coupon below. But you won't see the other half of the coupon to enter your subscription at the same time. After all, with our no-risk trial offer, you can't lose. And you'll be sure not to miss out on PC's information-filled Premier Issue.



GIVEAWAY RULES

- ☐ Mail entries postpaid to the address on the entry blank. Entries must be postmarked before midnight, March 1, 1982. Drawing will be held, and the winner notified by April 1, 1982. Prize delivery date will be subject to IBM product availability.
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HEURISTICS NEWS

THE TALK OF THE COMPUTER INDUSTRY™

VOL. 1, NO. 2

DEC. 14, 1981

It's All in the Mind™

By Dee Smith

SUNNYVALE—B. J. Schiffman, President of Heuristics, Inc., today announced the HCC SPECTRUM product line that will transform a Lear Siegler ADM series DUMB TERMINAL into a complete professional desktop computer system. For as low as \$2786 (single unit price) an ADM 3, 3A+, or 5 can become a complete CP/M[®] based system including CP/M, EDITR, Heuristics proprietary menu driven word processor and SPELLR—a real time spelling checker.

For the past five years Heuristics has manufactured microprocessor based speech recognition systems for both the personal and commercial computer markets. SPECTRUM like the company's Series 5000 recognizers fits inside Lear Siegler's DUMB TERMINALS. Mr. Schiffman indicated Heuristics is offering retrofit packages for the more than 200,000 existing ADM's. Complete packaged systems including ADM 5's or ADM 20 Series terminals are also available.

HCC's unique expanded CP/M based operating system in combination with their thin line Tandem 8" diskette drives provides the widest range of off the shelf software available today. Growing or changing computing requirements

demand a system that can change. If no additional floppy or Winchester is needed, it is just plugged in. The SPECTRUM operating system automatically reconfigures the system based upon the hardware attached. No system rewrites required.

The HCC SPECTRUM can accommodate up to 276 megabytes of desktop storage—enough for the most sophisticated user.

Schiffman expressed the belief that, "the explosive market for desktop business machines will demand reliable commercial grade equipment." He feels, "the combination of the Lear Siegler terminals, NEC printers and Tandem 8" drives will yield the level of performance the commercial world expects."

Heuristics will be supporting this new product line with a program called HCC EXPRESS. Separate WATS lines for dealers and end users plus guaranteed overnight delivery of spare parts will give SPECTRUM suppliers and users the reliability and service expected from traditional mainframe suppliers.

"DUMB TERMINAL IS A TRADE MARK FOR LEAR SIEGLER INC."
"CP/M IS A TRADE MARK OF DIGITAL RESEARCH"

Powerful Editor Uses Only 7 Function Keys

By J. Watkins

SUNNYVALE—SPECTRUM's powerful word processing system, EDITR, like all of the software supplied with SPECTRUM, uses just 7 function keys. And characteristic of software supplied with the HCC SPECTRUM, EDITR uses a single line menu at the top of the ADM terminal screen. The menu is always in the same format, so that even beginners rapidly learn to use all advanced features.

The home key moves control from the menu to the text area—and back again. That's all there is to it. To enter data, just type it. What you see is what you get. There are no control characters on the screen to confuse operators. As the cursor passes over characters that have been underlined or made bold a message appears at a standard place on the "message" line—always line two on the screen—telling the operator of any special features applied to that character.

Enabling these features is easy, too. They are activated from the menu by hitting the down arrow (Line feed on ADM-3's). After positioning the cursor on the character to be marked, pressing the space bar will then be necessary to add the feature to the character under the cursor.

Disabling a feature is accomplished in a similar way—except the RUB key is used to "rub out" the feature.

The identical approach is used for executing boldface, underline, superscript, and subscript. Marking text for cuts, copies, and moves is accomplished in the same manner—the space bar places a mark under the cursor, and the RUB key removes a mark.

Any of these functions can be applied to a

whole line—by placing the cursor on the line control character at the left of the screen; or, to the whole window by placing the cursor on the WINDOW field on line one. Putting the cursor on the line control character and hitting RUB will delete an entire line. And pressing a space while in the BOLD mode will make the entire line BOLD.

Of course, the editor provides for global

searches, moving text between files, centering, auto word wrap, and right justification—all using the same controls.

With a system this simple learning time is minimal. Office workers who have never before used a word processor can be up and running productively in less than fifteen minutes.

Heuristics Announces HCC Customer Express

SUNNYVALE—Now you can call the Heuristics Corporate support center in Sunnyvale, CA on toll free 800 lines.

HCC Customer Express number is 800-538-5108. Heuristics also maintains an unpublished number available exclusively to authorized HCC dealers and distributors.



HCC Spectrum Professional Station I

Easy Expansion to Larger Systems

By K. Webber

SUNNYVALE—Easy expansion to larger systems is readily available in the HCC SPECTRUM computer line. Growing or changing computing requirements demand a system that can grow with the user. SPECTRUM's expandability is built right into HCC's unique CP/M based operating system. All the software drivers for HCC SPECTRUM peripherals are included in each system add.

Upgrading a Floppy Based Starter System I with a 5% POWERSAFE Winchester is as easy as plugging in just two cables. When power is reapplied the Winchester subsystem will be on-line with from 3.5 to 22 megabytes of additional storage—nothing else needed. Careful software

design and attention to detail make the operating system usable by even the most naive user.

Letter quality word processing is available by the addition of a 33 character per second NEC 3330 Spewriter. A 55 character Spewriter—the NEC 7730—is also available. Plug-in the supplied cable and turn the power on. Again, there's no new software to buy—it's all there from the beginning.

Up to four 12 megabyte double density, double sided thin-line floppies can be added to the system in the same manner, bringing the total storage available to 276 megabytes.

A low cost serial printer is available when draft quality copy is all that's required. The printer plugs into the serial port; no new software needed.

EDITR, included with every HCC SPECTRUM computer, runs with both the serial printer and the NEC Spewriters without any special installation.

3740 Compatible Plus 1.2 MB Capacity

By V. Watts

SUNNYVALE HCC SPECTRUM introduces the Tandem thin-line disk drive with 1.2 megabytes of storage in a quiet, reliable and compact design. Up to 4 disk drives can be connected to the SPECTRUM, giving a total of 4.8 megabytes of formatted diskette storage. The system uses 8-inch disk drives with industry standard IBM format—for the price you would normally pay for 5¼-inch disk drives. SPECTRUM is quiet enough to have on your desk—because Tandem thin-line drives run cool, when being accessed. Drive reliability comes from Tandem's proven field record as the current volume leader in floppy disk drives. Attractive, compact units complement today's highest work stations. The disk drive can even hold a letter sized at the same level as the screen.

The software advantage of the Tandem 8-inch disk drives will be significant to SPECTRUM users. 1500 dealers world-wide can support users with standard CP/M software; therefore Heuristics is not the only source. And, of course, each disk drive can read and write single or double density, single or double sided diskettes.

For information call
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Bank of California Automates Balance Reporting

SAN FRANCISCO — Faced with fluctuating interest rates, many companies are beginning to examine cash management services carefully when choosing their banks.

In response to this trend, the Bank of California has added an automated balance reporting system called Cash Advisor to its package of cash management services.

Designed to save users time in transaction monitoring, Cash Advisor represents an

other venture into computerized cash management for the bank, according to John Westsmith, vice-president and manager of corporate services.

The bank's corporate customers can access Cash Advisor daily for accurate information on ledger balance, total debits and total credits in all their accounts, Westsmith said. To implement the package, the bank uses the software, computing power and international telepro-

cessing network of ADP Network Services, Inc., he said. Each morning, the bank transmits customers' updated balance information, stripped from the direct de-

posit file, to Network Services' computer center in Ann Arbor, Mich. The bank's customers can access the information through terminals or Telex machines in

their offices, or by calling ADP's toll-free number, he explained.

The bank selected ADP after an intensive four-month search, Beverly Tanler, product manager for Cash Advisor, reported.

Tanler said she was impressed by ADP's flexibility. The system they developed will allow us to grow into other areas of computerized cash management with relatively little incremental cost. The added plus of local sales and technical support convinced the bank to choose ADP.

BAI Backs Info Network for Banks

ROLLING MEADOWS, Ill. — A proposal to establish the first national electronic information and education network for the banking industry was endorsed at the annual convention of the Bank Administration Institute (BAI) in Hawaii recently.

The rising expenses associated with traditional education such as travel, accommodations and indirect costs such as time away from the office are prompting the institute to begin distributing a growing number of educational programs electronically, according to George D. Norton, chairman of the institute.

Initially, the on-line system will support eight services including statistical comparisons, electronic message capability and Regnowar, the institute's data base on the latest developments in banking regulations.

Program Testing

Beginning early next year, the institute will be testing several educational programs. Study-Bank will be one of the first programs offered. Included in the initial courses in the Study-Bank library are "Internal Auditing" in the "Banking Industry," "A Guide to Bank Taxation and Tax Return Preparation" and "Trust Administration." Other courses in teller training and bank security are being developed.

Users who wish to participate in the Study-Bank program can acquire a terminal for less than \$150 and individual courses in the library will cost about \$55, the association said.

Other alternative delivery methods to be tested during 1982 include teleconferencing and a satellite TV seminar with two-way communications capabilities, which is

set for trial in 48 cities next month.

More information is available from the institute at 60 Gould Center, Rolling Meadows, Ill. 60008.



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This is a fact proven in a recent benchmark study comparing the two dominant data bases, Series 80 TOTAL* and IBM's, which together comprise 85% of the DBMS market. While IBM's market share is larger, Cincom's TOTAL is so clearly superior in performance that it may be the only long term solution for high performance, complex environments.

The study also compares Series 80 TOTAL with the other independent data bases. And again TOTAL is vastly superior, delivering:

- CPU utilization—183% better
- Execute time—223% better
- Disk access—221% better

In short, this benchmark study dramatically confirmed what 4,000 Cincom users already know. No other DBMS measures up to Series 80 TOTAL.

CPU UTILIZATION

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EXECUTE TIME

CINCOM 100%



DISK ACCESS

CINCOM 100%



This independent benchmark compares Cincom's DBMS with IBM's and 3 non-Cincom systems. The graph shows the average of 3 jobs combining sequential, random processing and structural maintenance using Cincom as base 100%.

SERIES 80 TOTAL: SUPERIOR IN USE.

Every day, around the world, TOTAL substantiates the findings of this benchmark study. Non-Cincom data bases point to 10-20 integrated files and 200,000 transactions per day as evidence of high performance. Compare those figures with two of TOTAL's many successful users:

- A major industrial manufacturer maintains a highly complex 600 file data base with over one billion records and 820 relationships.

- A Fortune 100 transportation company processes 16.5 million data base calls per day and still delivers two-second response time.

SUPERIOR IN RETURN ON YOUR INVESTMENT.

Even if you've invested heavily in a DBMS that can't support your performance demands, conversion to TOTAL could still be your wisest solution. For example:

- A major communications corporation was faced with purchasing \$5.5 million in additional equipment to support IBM DB/DC software that had reached its performance limits. By converting to Cincom, the user avoided that expense. And as a bonus, gained better performance on their existing CPU.

Doesn't it make sense to start with the DBMS you can stay with? Cincom's Series 80 TOTAL users consistently have more success and process greater volumes on larger data bases. And in today's productivity conscious environment, DBMS performance equals satisfaction.

SERIES 80 TOTAL. FROM CINCOM SYSTEMS.

For a detailed report of this benchmark study, along with more about the benefits of converting to TOTAL, contact our Marketing Services Department: 800-543-3010. In Ohio 513-661-6000. In Canada 416-279-4220.

- IDC reports August, 1980; March 1981



Cincom Systems

Cincom Systems/2300 Montana Ave. Cincinnati, OH 45221



SDC's computer establishes a master schedule and arranges the production schedule.

Drilling Company Gushes Over Computer, Materials Management Software Package

IRVINE, Calif. — A highly specialized drilling company here is combining unique instrumentation with a computer system and a materials management software package to provide the oil industry with services ranging from design and testing to actual oil production.

Scientific Drilling Controls (SDC), a wholly owned subsidiary of Scientific Drilling International, currently uses a Hewlett-Packard Co. HP 3000 computer to help manage its manufacturing and financial departments, as well as in the field for wellbore surveying.

With the help of the computer and its Materials Management/3000

manufacturing software, the firm meets its surveying and drilling needs, from planning wells to surveying completed ones. According to James Murray, president of Scientific Drilling International, the computer "greatly helps reduce costs both internally and to our customers."

SDC offers a steering tool called the Electron Yaw Equipment (EYE), which provides information for maintaining proper orientation of downhole drilling motors. It tells drilling personnel the tool facing relative to the high side of the drilling hole and gives the orientation of the tool face in relation to magnetic North.

The information obtained then goes through a decoder and is fed into a computer, which generates a report listing the exact location of the drilling tool.

To further utilize EYE and to streamline financial and tool manufacturing procedures, the company installed the HP 3000 in November 1979. "The computer has solved a lot of problems for us in each area," the firm's manager, Dave Houy, said.

One of the firm's major objectives was to handle all its survey problems with one computer. Previously, a number of service bureaus were necessary to meet the company's computer requirements. "With the HP 3000, that's changed," Houy said. "Now, all of our field offices can offer full services to the oil drillers and companies in their area."

Service bureaus also presented a problem for general ledger and accounts payable. The bookkeeping was sent to the service bureau once a month with no allowance made for error correction or update. "The reports received were correct only in the unlikely case that all input was perfect," Houy explained.

Because of the company's substantial rate of growth and lack of a viable material control system, the manufacturing and production facilities also were rapidly becoming overloaded, according to Houy. A manual filing system was used to keep track of orders and to plan production of equipment. Large numbers of personnel were involved in expediting and keeping track of the production process. As a result, too much money was unnecessarily tied up in stock inventory.

Inventory Aid

"We eventually expect to cut our inventory 25% with the help of the Materials Management/3000," Bill Wright, SDC's manufacturing operations manager, explained. "We can now plan ahead. We know exactly how many parts are required and when, so we're able to keep inventory at the most economical level."

Houy said the surveying applications for the HP 3000 offer the greatest potential for saving money.

When a customer requires SDC's services, a team goes into the oil field with the necessary drilling equipment and a portable terminal. Data fed from the EYE or other field equipment is transmitted to the HP 3000 via Tymnet, Inc.

"Once we dial the access number from the field, we are on the computer, within one-half second," Houy said. "We can obtain critical information on drilling progress almost immediately." Previously, the engineer hand calculated in the field, drove into the district office (which could be 200 miles away), fed the data into the computer and then returned to the field with the results — a process that could take several days. With the new computer system, the engineer never has to leave the rig.

Wright said the system has reduced inventory by \$110,000 during its first six months of computer operations and predicted a substantial savings in production labor for the future.

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Service Bureau Tracks Union Pension Funds

HYATTSVILLE, Md. — Data processing services are going to have to become even more sophisticated to meet the increasingly stringent federal requirements placed on union-sponsored pension funds, according to John J. Starzec, president of SBD Computer Services Corp., a service bureau here.

Despite President Reagan's proclaimed intention to "get government off the peoples' backs," these funds are barely keeping up with today's requirements and new regulations are being added constantly, Starzec said.

A prime example is the amended Employee Retirement Income Security Act of 1974 (ERISA), which requires, among other things, that pension funds periodically provide detailed information to various federal agencies on the status of members' pensions. Pension accounting for single-employer funds is complex enough, but a typical Taft-Hartley multi-employer trust can cover anywhere from two to several thousand contributing employers, according to SBD. In addition, a given employee may work for many different employers in any single year.

Starzec estimated that only 15% to 20% of the more than 2,000 multi-employer funds are adequately computerized. In particular, smaller funds are finding that the old manual methods will no longer suffice, he maintained.

Computer power is the obvious solution, but what kind of computer power? An in-house mainframe system used only occasionally for the complex tasks of file maintenance can be prohibitively expensive. And, while minicomputer-based systems reduce costs, they tend to become easily saturated, Starzec said.

A Third Alternative

SBD, which provides DP services for the union-affiliated, multi-employer pension funds created by the original Taft-Hartley Act, offers a third alternative, he explained.

The firm currently processes monthly reports from about 30,000 employers making collectively bargained contributions on behalf of 800,000 covered employees in an environment based on Univac hardware and software.

In mid-1980, the company upgraded from a Model 9480 computer to a Univac 1100/60 with 512K words of main storage and implemented Level

3782 of Univac's Exec VIII operating system.

In addition, SBD recently replaced four disk units with dual-6470 high-density disks and is adding on-line terminals to meet customer needs. The firm uses Univac's U-200 CRT terminals and the 1100/60 can handle more than 500 without system degradation, Starzec noted. Other Univac equipment on site includes U-16 magnetic tape drives, Model 0768 high-speed printers, multiple card readers and a BC-7 minicomputer to handle remote diagnostics via telephone hookup with the Univac facility at Roseville, Minn.

In terms of software, SBD provides Univac's Mapper interactive data base management system, which al-

lows the smaller customer — such as a local union — relatively easy entry into DP without buying equipment or hiring DP professionals, a spokesman said.

However, the bulk of the service bureau's present customers are large and can use more conventional DP techniques, he continued. Clients provide information on preprinted forms for later entry into the system. Because the employer's contribution to the pension fund is based on the hours (or dollars) of work recorded for each employee, files for each participant must be constantly updated.

The completed forms are mailed to the service bureau at the same time the employer mails his check to the union's pension fund. If there is an

overpayment or underpayment, SBD notifies the employer so necessary corrections can be made on the following month's report, the spokesman noted.

These inputs create a data base with a separate record for each employee, including social security number, employer identification number, rate of employer contribution, credits per payroll period and accumulated benefits, he said.

Other outputs include quarterly and annual computations of interest on individual pension accounts, pay-out and pay-back processing for money withdrawn from a pension account, retirement checks and such government forms as the W-2's (a retired person's equivalent of W-2s).

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'Latest Phase' in Bank Automation

Teller Journaling Bears Fruit for Bank Branches

TRUMBULL, Conn. — The latest phase in the automation of bank branch operations is electronic journaling, a software application designed to improve the storage and retrieval of teller transactions at bank branches for cash control and customer problem resolution.

As Roger N. Schindler, vice-president of systems management for The Arizona Bank, reported, "Electronic journaling has increased teller productivity at our 93 branches throughout Arizona by six to seven percent — and that's on top of the 20% productivity increase we had already achieved by installing our on-line teller terminal network."

By creating an electronic transaction journal on a magnetic disk medium at each branch and providing the capability for tellers and branch officers to perform journal searches and transaction retrievals through use of a search mask displayed on teller or administrative terminal CRT terminal screens, electronic journaling is said to eliminate the need for tellers to maintain paper journals of each day's transactions.

This, in turn, would relieve the bank of the need to collect and store paper journal tapes to track down individual transactions to resolve teller cash accounting problems or customer disputes. Electronic journaling also can enable tellers to perform periodic cash-outs and end-of-day proofing operations faster than the 20 to 30 minutes previously required.

Tellers can now locate any transaction in seconds, utilizing one or more search parameters such as transaction sequence, time of day, account number, dollar amount or dollar amount range, he continued. Such searches formerly took from several minutes to as much as an hour with paper journal tapes.

"Furthermore, our tellers can now correct, or reverse, erroneous transaction entries by simply keying in the correct data and pressing a function key on their terminals," Schindler said.

Washington Bank

John F. Frey, senior vice-president of Puget Sound National Bank in Tacoma, Wash., which has installed an electronic journaling and on-line teller terminal network, explained the reasons for his firm going to electronic journaling.

"Our tellers formerly had to close their stations twice

each day to calculate cash-out totals in order to have checks and other cash-out items ready for messenger pickup and delivery to our proofing and data processing departments. Each of these cash-out processes took between 15 and 20 minutes. Today, since our electronic journaling system keeps running totals of all transactions

by transaction type, the same process takes about 15 seconds. That makes each of our tellers available to service our customers for an additional 30 to 40 minutes each day."

Serves More Customers

Frey's bank concluded that installation of electronic journaling throughout its 52-

branch network will enable it to service an additional 1,600 customers per day, or 32,000 additional customers per month without adding a single teller to its staff.

Both financial institutions obtained the electronic journaling systems from Bunker Ramo Information Systems.

Central Bank, based in Oakland, Calif., with 55 branches

throughout the state, also uses the journaling system. Thomas C. Warren, senior vice-president of Central's Automation Division, reported teller staff reductions from 391 to 299 as a result of electronic journaling and other on-line teller operations. The result was an estimated annual savings of \$964,000, he said.



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Software Protection Group Seeking New Membership

TUJUNGA, Calif. — The Association for Software Protection (ASP), formed last May to reduce software piracy, is in the process of accepting membership applications.

Among the services ASP will offer its membership are a bimonthly newsletter containing case histories, legislative updates, responses to member questions and news on protection.

In addition, the organization will establish an information library containing data on international software laws and customs as well as a compilation of protection problems within the industry and current solutions available for those problems, according to a spokesman for the organization.

ASP said it intends to research a variety of software protection issues and make the findings and recommendations available to members.

Other plans include conferences, seminars, practical assistance on protection and referral services to prospective users.

Two categories of membership are available:

- Associate memberships generally apply to attorneys and educational organizations and cost \$150/year.

- Participatory memberships are available for \$350 and will include all services offered by the organization.

Information may be obtained from Robin Robinson, President, ASP, 10143 Leona Ave., Tujunga, Calif. 91042, or from Adrienne Webb, Suite 340, 3336 Broadway Road, Sacramento, Calif. 95827.

Problem Choice Seen Key Factor In System Plan

WASHINGTON, D.C. — Successful information systems planning hinges on "working the right problems" to provide maximum support for business goals.

This was the advice given executives attending a recent George Washington University conference here on "Managing the Proliferation of New Technologies."

"The only way to make sure the right problems are being addressed is by integrating business and information systems strategies," according to Dr. Thomas P. Gerrity, president of Index Systems, Inc., a management consulting and systems development firm. "Alignment of these strategies is essential, since each has a major impact on the effectiveness of the other," he emphasized.

Gerrity noted that 47% of the U.S. labor force now is engaged in information-handling activities.

"Unfortunately, there have been only minimal productivity gains among office workers over the past 20 years," Gerrity said and added that "managerial and professional employees have the least information systems support, even though they represent 77% of the office worker payroll."

Decision-support systems are playing an increasing role in improving the effectiveness of managers at all levels, according to Gerrity, because they give the ability to anticipate and avoid problems, rather than merely assess the damage after they occur. "As these systems become more institutionalized by corporations and tied into transactional data bases, they will offer a significant competitive advantage," the Index Systems president predicted.



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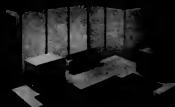
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Jan. 18-19, New York — Tomorrow's Paperless Office. Contact: Business Seminar, Ph.D. Program in Business, CUNY, Box 328, 17 Lexington Ave., New York, N.Y. 10010.

Jan. 18-20, Phoenix — Data Communications. Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

Jan. 18-20, New York — DL/I Applications Programming. Contact: I. Zelin, Compmed, 1133 Ave. of the Americas, New York, N.Y. 10036.

Jan. 18-20, Washington, D.C. — Configuration Management of Software

Programs. Contact: Director, Continuing Engineering Education, George Washington University, Washington, D.C. 20052.

Jan. 18-21, Honolulu — Pacific Telecommunications Conference. Contact: Pacific Telecommunications Conference '82, Suite 1110, University Ave., Honolulu, Hawaii 96824.

Jan. 18-21, Pleasanton, N.J. — CICS/V5 Testing and Debugging. Contact: I. Zelin, Compmed, 1133 Ave. of the Americas, New York, N.Y. 10036.

Jan. 18-21, New York — DMS/DB (DL/I) Application Programming. Contact: On-Line Software International, 65 Rt. 4 E., River Edge, N.J. 07661.

Jan. 18-22, Chicago — Information Analysis Workshop. Contact: Jill Hyman, Information Methods Corp., 504 Totten Pond Road, Waltham, Mass. 02154. Also being held Jan. 18-22 in Los Angeles and Washington, D.C.

Jan. 18-22, Houston — Structured Systems Design/Structured Requirements Definition. Contact: Jim Highsmith, Ken Orr and Associates, Inc., 715 E. 8th, Topeka, Kan. 66607.

Jan. 18-22, Boston — Structured Analysis Workshop. Contact: Structured Methods Inc., 7 W. 18th St., New York, N.Y. 10011. Also being held Jan. 18-22 in Washington, D.C. and Jan. 25-29 in Los Angeles.

Jan. 19, Des Plaines, Ill. — Interrelation of Micrographics with other Technologies. Contact: Marvin Brooks, National Micrographic Association, Square D Co., Executive Plaza, Palatine, Ill. 60067.

Jan. 19, San Francisco — Network Optimization and Tariff Impact Strategies. Contact: Judy Maurer, Seminar Coordinator, The DMW Group Inc., 2395 Huron Pkwy., Ann Arbor, Mich. 48104.

Jan. 19-20, Teaneck, N.J. — Effective Presentations. Contact: Priscilla Goudreau, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Jan. 19-21, Chicago — Data Analysis. Contact: Priscilla Goudreau, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Jan. 19-22, Kansas City, Mo. — Structured Requirements Definition. Contact: Jim Highsmith, Ken Orr and Associates, Inc., 715 E. 8th, Topeka, Kan. 66607.

Jan. 19-22, Birmingham, England — The Which Computer? Show, National Exhibition Centre, Contact: Clapp & Polak International, 7315 Wisconsin Ave., Washington, D.C. 20014.

Jan. 20-21, Washington, D.C. — Paperless Office. Contact: Workshop Administrator, Microcom, Inc., Watergate Mall, 2551 Virginia Ave., N.W., Washington, D.C. 20037.

Jan. 20-22, Dallas — Texas Computer Show. Contact: Texas Computer Show, P.O. Box 214035, Dallas, Texas 75221.

Jan. 20-22, Washington, D.C. — Evaluating and Selecting Automated Office Systems. Contact: The George Washington University, School of Engineering and Applied Science, Washington, D.C. 20052.

Calendar

Jan. 20-22, Los Angeles — Hot New Staff in Information Systems. Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

Jan. 20-22, Madison, Wis. — Business Communications — Tools for Tomorrow. Contact: Francis P. Drake, Department of Engineering & Applied Science, University of Wisconsin-Eston, 432 N. Lake St., Madison, Wis. 53706.

Jan. 20-23, Chicago — Data & Telecommunications/Japan Expo Scheduled for '82 Presentation. Contact: Industrial & Scientific Conference Management, Inc., 22 W. Adams St., Chicago, Ill. 60606.

Jan. 21-22, Waltham, Mass. — Fundamentals of Data Processing for Administrative Assistants and Office Support Staff. Contact: Seminar Administrator, New Hampshire College Resource Center, New Hampshire College, 2500 N. River Road, Manchester, N.H. 03104.

Jan. 21-22, New York — 1545/V5 Data Communications Applications Programming. Contact: I. Zelin, Comped, 1133 Ave. of the Americas, New York, N.Y. 10036.

Jan. 21-22, Scottsdale, Ariz. — User Documentation. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Jan. 21-22, Washington, D.C. — Applications of Computer Graphics to Transportation Problems. Contact: Eloise Wenker, National Computer Graphics Association Seminar Program, 2033 M St., N.W., #300, Washington, D.C. 20030.

Jan. 22, Los Angeles — Computer Crime and Countermeasures. Contact: UCLA Extension, P.O. Box 24901, Los Angeles, Calif. 90024.

Jan. 25, Tampa, Fla. — Management Overview of Data Structured Systems Design. Contact: Jim Highsmith, Ken Orr and Associates, Inc., 715 E. 8th, Topeka, Kan. 66607.

Jan. 25-26, Los Angeles — Information-Oriented Graphic Design in Computer Graphics. Contact: Eloise Wenker, National Computer Graphics Association Seminar Program, 2033 M St., N.W., #300, Washington, D.C. 20030.

Jan. 25-26, Scottsdale, Ariz. — Software: A Legal Briefing for EDP Professionals. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Jan. 25-26, Atlanta — Developing and Implementing a Purchase Order Management System. Contact: Sylvia Vogelman, Seminar Manager, Center for Retailing Management, 425 Park Ave., New York, N.Y. 10022.

Jan. 25-27, New York — Legal Tech '82. Contact: Corporate Presentations Inc., P.O. Box 935, Ansonia, Station.

New York, N.Y. 10023.

Jan. 25-27, Atlanta — Improving An Automated Payroll System. Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

Jan. 25-27, San Francisco — Development of The Automated Office: A Managerial Perspective. Contact: Automated Office Systems, Suite 312, 419 Boylston St., Boston, Mass. 02116.

Jan. 25-27, Orlando, Fla. — EDP Disaster Recovery. Contact: EDP Security, Inc., 181 W. St., Waltham, Mass. 02154.

Jan. 25-27, Wellesley, Mass. — Distributed Computing Systems. Contact: Priscilla Goudreau, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Jan. 25-27, Raleigh, N.C. — Data

Communications Fundamentals. Contact: Priscilla Goudreau, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Jan. 25-28, Wellesley, Mass. — Structured Programming: Techniques for Productivity. Contact: Priscilla Goudreau, Q.E.D. Information Sciences, Inc., P.O. Box 181, Q.E.D. Plaza, Wellesley, Mass. 02181.

Jan. 25-28, Atlanta — Computer Contracts. Contact: Ruth K. Dargis, Registrar, Brandon Consulting Group, Inc., 1775 Broadway, New York, N.Y. 10019.

Jan. 25-29, Arlington, Texas — CICS Command Level Programming. Contact: Priscilla Goudreau, Q.E.D. Information Sciences, Inc., P.O. Box 181,

Q.E.D. Plaza, Wellesley, Mass. 02181.

Jan. 25-29, Hartford, Conn. — Structured Analysis/Design Workshop. Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Jan. 25-29, Detroit — Information Analysis Workshop. Contact: Jill Hyman, Information Methods Corp., 504 Town Pond Road, Waltham, Mass. 02154.

Jan. 25-29, Cleveland — Structured Systems Design/Structured Program Design. Contact: Jim Highsmith, Ken Orr and Associates, Inc., 715 E. 8th, Topeka, Kan. 66607.

Jan. 25-29, Fincastle, N.J. — Vasm Coding for Higher Level Languages. Contact: I. Zelin, Comped, 1133 Ave. of the Americas, New York, N.Y. 10036.

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SIXTH ANNUAL SYMPOSIUM ON COMPUTER APPLICATIONS IN MEDICAL CARE, Washington, D.C., Oct. 30-Nov. 2, 1982.

Topic areas for contributions include medical applications, computer systems and techniques and demonstrated benefits.

Submissions are due by March 15, 1982, to Program Chairman Bruce Blum, Johns Hopkins University, Traylor 514, Baltimore, Md. 21205.

SIXTH INTERNATIONAL CONFERENCE ON SOFTWARE ENGINEERING, Tokyo, Sept. 13-16, 1982.

This conference is being jointly sponsored by the Information Processing Society of Japan, the Institute of Electrical and Electronic Engineers (IEEE) Computer Society, the Association for Computing Machinery and the National Bureau of Standards. Papers are being sought on tools and techniques of software engineering, requirements and specifications, theoretical foundation of software engineering, computer-aided design and production of software; project management and human factors; quality control and assurance; maintenance; metrics; practices and experiments; software engineering for new computer architectures, distributed systems and networks; and education on software engineering.

Five copies of papers should be submitted by Jan. 15, 1982, to Prof. Victor Basili, Department of Computer Science, University of Maryland, College Park, Md. 20742. The Technical Committee on Software Engineering of the IEEE Computer Society is sponsoring up to two prizes of \$1,000 each for outstanding papers.

VIDIOTEX 82, New York, June 24-30, 1982.

Papers are being sought on the following topics: videotext in the home; electronic mail and funds transfer; electronic publishing; advertising through videotext; transactional videotext; telebanking and direct marketing; in-company information systems; applications in specific fields: travel, hotels, retail, newspapers, director publishing, finance, government; applications case studies; educational applications; systems justification and costing; predicted user groups; internationally based systems; broadcast videotext and cable TV systems; regulatory and legal issues; social impact; related developments; terminal design; and network structuring.

Summaries (100-200 words) and author biographies are due immediately; rough drafts of papers are due Dec. 31. Notification of acceptance will be in February. Address correspondence to Paula Stockham, Videotex 82, Online Conferences Ltd., Argyle House, Northwood Hills, HA5 1TS, Middlesex, UK.

THE URBAN AND REGIONAL INFORMATION SYSTEMS ASSOCIATION (URISA) 20th ANNUAL CONFERENCE, Minneapolis, Aug. 22-25, 1982.

Papers, presentations and panel discussions are being sought on the conference theme of "Practical Applications of Computers in Government." Specific subjects include geographic systems and techniques; planning and policy analysis; interactive graphics; mapping systems; census DP and analysis; data base management; market and service area analysis; parcel-level tax, title and planning systems; natural resource management systems; DP policy issues; micro applications; local government information systems for operations management and service delivery; theories on what's ahead/new technologies.

Two copies of a half-page abstract should be submitted before Jan. 15 to Thomas Palmerlee, Conference Chairman, Suite 300, 2033 M St. N.W., Washington, D.C. 20006.

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Register now for this great opportunity to talk with the whole communications industry.

There will be something for everyone during these five days of conference sessions. You may sign up for any or all of the programs. Here's how the schedule works:

Monday, January 11: This is a pre-conference series of professional skills classes, "In-Depth," taught by leading educators. Topics include networks and satellite transmission. The cost is \$245, including lunch and text.

Tuesday to Friday, January 12-15: This four-day program includes sessions on voice/data and telecommunications and includes special sessions Thursday and Friday on electronic mail and office communications (EM/OC) — for which you can sign up separately. Admission includes lunch and beverage in the exhibit hall for each full day of sessions and is \$445.

Thursday and Friday, January 14-15: This is the special program on electronic mail and office communications only (EM/OC) and includes lunch and beverage on Thursday. Admission is \$245.

To register for the conferences, call toll-free 1-800-225-4698 (in Mass. call 617-879-0700) and ask for Louise Myerow, registration coordinator, or return the coupon below.

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EDITORIAL

User, Shield Thyself

A Federal Communications Commission ruling that went into effect recently focusing on the amount of electromagnetic or radio "noise" emitted by computers and peripherals may have more of an impact than most information systems executives realize.

Unfortunately, this impact will probably be felt more by computer users than by vendors — especially when those users try to resell rule-violating systems.

The basic aim of the FCC ruling — which establishes specific radio frequency ceilings — is to prevent computers, disk drives and other DP hardware from interfering with television or radio broadcast signals [CW, Nov. 30]. All computers emit radio signals of some kind, but some models radiate more powerful signals than others; this is where problems sometimes occur.

Computers and equipment violating FCC requirements will have to be shielded — possibly even redesigned — to meet the regulatory agency's emissions guidelines.

Vendors, for the most part, are not worried about the FCC's rule. While equipment placed into production after Oct. 1, 1981 must comply immediately, machines in production prior to that date do not have to meet the FCC's requirements until Oct. 1, 1983. That leaves plenty of time for vendors to ship radio-interfering systems or replace rule-violating machines with redesigned and shielded models.

However, computer users are not so fortunate. Although present owners of "noisy" machines — and those purchasing computers in production before Oct. 1, 1981 — can wait until 1983 to fix the electromagnetic problem, the money for the fix will probably come out of the users' pockets.

The majority of vendors contacted admitted they would help users identify the source of the radio interference. But none of these firms offered to foot the bill. In addition, users of rule-violating machines will probably have trouble selling these systems to other users, according to sources familiar with the ins and outs of preowned computers.

Although the FCC did not specifically indicate that it would prevent users from putting older systems on the selling block, a spokesman for the government agency hinted that the FCC would like to see all DP equipment "brought to compliance before it is sold."

The bottom line is that if users do not pay to fix the systems before selling them, they may face the FCC's wrath in coming years. They might even be forced to accept less than the book value for rule-violating systems from buyers that use the system's drawback as a negative buying point.

The FCC is reserving final judgment on resales until after the 1983 compliance deadline or until a user's case comes into the regulatory limelight. Until then, users will have to play the radio frequency situation by ear and hope their computer systems do not offend the ears of anyone nearby.

DATA PAST

Five Years Ago

Dec. 13, 1976

NEW YORK — With cuts made in the government's witness list in the antitrust case against IBM, a Justice Department spokesman said here that a June 1977 conclusion to the case seemed plausible.

On Sept. 19, 1975, the government's original witness list numbered 107 names. After 154 days, government attorneys, "apparently satisfied they have put a very strong case into the record," began to slash their list. Some attorneys were even predicting a closing date in May 1975.

Ten Years Ago

Dec. 15, 1971

NEW YORK — A study done here by the Diebold Research Corp. of 245 corporations in six major industrial classifications showed that the same percentage of revenues was spent on DP by both large and small firms.

The average DP expenditure was found to be 0.9% of corporate sales in manufacturing, with a high of 2.3 for aerospace and defense.

Within manufacturing, the typical firm spent nearly \$4 million annually on hardware rental and more than \$6 million on DP staff.



LETTERS

Not Diebold's Fault

Computerworld's Oct. 12 issue carried a story headlined "ATM Spits Out \$5,140 for \$40 Withdrawal," which blamed the malfunction on a Diebold, Inc. Model 910 ATM terminal. The story was false.

The cause of the problem was not the Diebold ATM. The Diebold 910 did exactly what it was instructed to do by the system in which it was installed. I quote from a letter from Harry D. Johnston, executive vice-president of First Interstate Bank of Arizona:

"Quite simply stated, the Diebold equipment had absolutely nothing to do with this event. I do not intend to describe what did permit this situation to occur, but the problem was not at the machine level."

The record needs to be corrected. Please publish this letter, along with a retraction of your Oct. 12 story, in your next issue.

Earl F. Weenitzer,

President

Diebold, Inc.
Canton, Ohio

He Said, Laughing...

With reference to "Expert: Incomplete Biggest Security Threat" [CW, Nov. 16], can't you ever get the quotes right, even when it is in your best interest?

"Contrary to 'what you read in Computerworld and other yellow journals,' Courtney said," should have read, "Contrary to 'what you read in Computerworld, The New York Times and other yellow journals,' Courtney said, laughing." There is a huge difference in the two versions.

Other than that, however, I do deeply appreciate the fair and accurate reporting of that particular talk.

Robert H. Courtney Jr.

Robert Courtney, Inc.
Port Ewen, N.Y.

Maxitax Not Objective

Computerworld attributes a statement to me regarding maximization of taxes as being the objective of the current revision study of California Board of Equalization Regulation 1502 — Automatic Data Processing Services and Equipment ("A Way to Get Revenues," CW, Oct. 26). This is untrue.

In fact, the regulation is being analyzed with the hope of better explaining and communicating the board's interpretation of the sales and use tax law as it pertains to the DP mills. Maximization or minimization of tax is a function of the legislature, not of the agency.

Frank P. Holby

District Principal Auditor

State Board of Equalization
State of California

Missing Reference

I appreciate the accurate and thorough article "Programmer Productivity Seen in Decline" [CW, Nov. 9] on my speech before the Data Processing Management Association in San Francisco.

The segment concerning "four plagues of programmer productivity" is based on and adapted from research done by Capers Jones, manager, technology transfer, ITT. This reference was inadvertently omitted.

Gopal K. Kapur

Kapur & Associates, Inc.
Danville, Calif.

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters should be addressed to Editor, Computerworld, Box 880, 733 Cochituate Road, Framingham, Mass. 01701.

SOFTLINE/Werner L. Frank

IBM Strategy Unfolds at Applications Summit

The applications software gap is widening and deepening. This observation has not been lost on vendors of hardware or software. Accordingly, IBM invited more than 100 representatives of leading independent software producers to what may be its first Application Software Development Conference.

Held in White Plains, N.Y., the two-and-one-half day meeting at the end of October was motivated by the critical need to produce more and better programmer productivity aids and end-user solutions to meet rising backlogs of applications. Also, availability of new hardware and the creation of new customer markets has added to the pressure to create more extensive software solutions.

Some statistics make the issue clear. Software product sales are forecast to reach \$5 billion by the mid-'80s. Also, many of the large data processing installations report a 30% increase in the number of applications waiting for implementation. This may now account for 20 systems in backlog which may require as long as four calendar years to implement with current staffs.

But, as was quoted from an MIT Sloan School of Management study, there is also an invisible backlog. This virtual backlog is comparable in size to the explicitly identified requirements. The lack of a good estimate of the true total need may be due to the sheer intimidation users feel when attention is not paid to servicing their stated, priority needs.

The conclusion is, of course, that there is a substantial untapped market for hardware if only the right software existed. It is this realization that prompted IBM to encourage the convergence of interest between itself and the many independent producers of applications software.

IBM's Attack

What then is IBM's proposal to help alleviate the situation? A twofold attack: First, create the best conditions for an applications development environment and, second, provide incentives to application producers to support IBM's various hardware offerings. The strategy of IBM for achieving a more satisfactory applications development environment includes the following:

- (1) Availability of application generators which enhance productivity in producing and maintaining applications software.
- (2) Simplification and standardization of the operating environment in order to promote the "application machine" rather than promulgate a computer with an evolving and flexible operating system.
- (3) Furthering of common and portable programming languages.
- (4) Development of common application interfaces that cross hardware boundaries.

The latter three points are most significant with respect to a new IBM strategy. Due to IBM's current reorganization of its manufacturing units, it may now be possible to enforce standardization of certain development tools and interfaces, at

least among similar or related systems. This particular conference focused on small systems, those that have a purchase price of less than \$350,000. Within IBM, 11 such systems were identified, including Systems 23, 34 and 38; the 5280, Series/1, the low-end 4300, the 4100 family and the Personal Computer.

The move toward simplification and standardization of the operating environment, cited in (2) above is a remarkable departure from IBM's standard pattern, which typically involves complex and ever-changing operating systems.

The languages that seem to be the out-front contenders for the class of small hardware systems are Cobol and Basic. Both appear to have an important role in standardizing on the implementation media. The upward movement of extended Basic from personal computer to larger hardware systems testifies to the increasing influence on software emanating from the microcomputer world.

A second important consideration in language choice is the query-and-file system. Preference was clearly stated for the nonhierarchical approach associated with relational systems. These SQL-type query systems need to be advanced as part of the overall software strategy for the IBM small system offerings.

The common interface standards are largely guided by the evolution of a dialogue manager. This software element seeks to establish across-the-board conventions in screen formats and design, menu management and the operation of the "help" facility. Users should recognize how to oper-

ate an interactive application regardless of the hardware. Therefore, screen presentations, cursor control, command lines and error returns should all appear similar from system to system. The program function keys should have compatibility, including standard positioning, whenever possible. These objectives were summarized to yield the benefits of "more solutions, easier to use, for more users on-line."

Standard interfaces also extends to inter-system communication, where it may be desirable to have data acquired in one system processed by a second computer or a processing function in one computer operate on data associated with a second CPU.

New Offering

In keeping with these objectives, a new offering was announced — the IBM 4300/SSX, a PRPC product. This system, using a DOS/VSE subset operating system called SSX/VSE, aims to be a small business machine suitable as a stable base for applications development. The operating system is delivered in object code, requires no system or JCL and, being mature code, should be substantially error-free. Neither operators nor systems programmers are needed.

There is a promise of little or no planned changes and enhancements, adopting thereby a repair-only orientation with respect to the maintenance of both the software and the hardware of this machine. A significant and persuasive argument in favor of this machine as an applications development workhorse is the promise of a reduction of expense-

tory documentation from 19,000 pages for the full DOS/VSE system to 2,000 pages for SSX/VSE.

The 4300/SSX is a machine on which IBM can immediately initiate its applications software strategy. This machine also promises to meet the new objective of making it attractive for the independents to devote resources in developing applications for IBM hardware. To further the interest and commitment of the independent software industry, IBM offered some new inducements including the following:

- Establishment of formal IBM contact points for software manufacturers with respect to information on IBM hardware and software plans.
- Public cataloging by industry or function of the independent's applications software operating on IBM computers.
- Providing at no charge IBM computer facilities to demonstrate non-IBM software if such a request is made by a potential client for the IBM hardware.
- Volume discount to independent packages of IBM hardware and software.
- Remarketing arrangements by IBM of non-IBM software.
- Willingness to make new marketing arrangements via retail stores and dealers.

The explosion of user needs and the unprecedented demand for application solutions makes this prospective cooperation of giant IBM and thousands of software authors a new phenomenon on the scene.

Frank is executive vice-president of Informatics, Inc. in Woodland Hills, Calif.

HUMAN CONNECTION/Jack Stone

Stockman Crunching More Than Data?

Most Washingtonians relish political scandal and when William Greider's article appeared in the *Atlantic Monthly* ("The Education of David Stockman," December 1981) there was a veritable firestorm of gossip in the capital city.

Of course, nearly all the talk and writing about Stockman's skepticism of "supply-side" economics has been devoted to the political and social implications of this revelation, and *Computerworld* is certainly not the medium for further discussion of this subject. But there is one aspect of the affair which, as far as I can tell, has been glossed over and which does point up some object lessons for the data processing community: Stockman's deceptive and, in my opinion, devious use of a computerized economic model to generate information supportive of White House monetary and fiscal programs and policies.

Here are some excerpts from the article, the validity of which is not denied by Stockman:

"In early January [1981] Stockman and his staff . . . were studying the internal forecasts for the federal budget and the national economy. The initial figures were frightening —

'absolutely shocking,' he confided. An [Office of Management and Budget (OMB)] computer, programmed as a model of the nation's economic behavior, was instructed to estimate the impact of Reagan's program on the federal budget. It predicted that if the new President went ahead with his [program] . . . the Reagan administration would be faced with a series of federal deficits without precedent in peacetime."

Consistency Measures

The deficit figures were totally incompatible with the administration's announced goal of a balanced federal budget in 1984 and so Stockman set about to change the computer to make its output consistent with the goal.

Assisted by like-minded supply-side economists, the new team discarded orthodox premises of how the economy would behave. Instead of a continuing double-digit inflation, the new computer model assumed a swift decline in prices and interest rates. Instead of the continuing pattern of slow economic growth, the new model was based on a dramatic surge in the nation's productivity."

Stockman's actions constitute a clas-

sic case of how computer power can be abused. To this very day, the uninitiated are still awed by the computer mystique and politicians are probably the most gullible. Since the era of Robert McNamara, our federal legislators have been mesmerized by the testimony of bright young articulate "computer-types" who can thumb through a foot-high listing and find answers to complex questions seemingly within seconds.

American industry and government are peppered with people like Stockman who take advantage of their positions to achieve program objectives through convincing, but illusory, arguments made "credible" by what the computer says. They saw the technical knowledge required to reprogram an algorithm here or a statistical subroutine there to generate results that, by merely appearing on a computer-generated listing, appear to be authoritative but in truth turn out to be sham. Perhaps it is the passion for success that drives them to do this, or maybe it is an emotional commitment to some cause or other, but whatever the explanation, I for one would like to see them retire to some far-off island in the South Pacific.

What's in a Name?

Computerworld has gone to great lengths to publish letters, commentaries and articles on data algorithms, whether GOTO is a needed statement and the nine-digit Zip Code. All those issues are very important and some are already being taken into consideration by software houses, computer end users and organizations.

Nevertheless, there is an issue that nobody seems to have considered so far, an issue that affects millions of people (real, flesh-and-blood people). I am referring to the way the data processing community approaches a person's name.

For instance, I do not have either a "first" or a "last" name, and certainly I do not have a "middle initial." In fact, most people in the world cannot relate to those concepts. I have a given name

and a family name — both of them very important to me. In my own culture and several other cultures, people can have one or several given names (which one would be the "first" name?) or a single multipoint given name (with no intervening hyphens, dots or slashes).

Family names can be one of several words (including conjunctions, prepositions and prefixes or suffixes to denote descendancy) and they come, in many cases, preceding the given name (which one would be the "last" name?).

For example, on the 1982 National Computer Conference registration form, the "first" name is allowed only eight characters, not enough for

names such as Christopher or Maria Theresa, while the "last" name is allowed 14 characters — insufficient for many family names. Why can't we plan better ways (read: longer or variable length fields) to handle names?

Unless the country adopts a legal way to force everybody in the country (natural and naturalized citizens, permanent resident aliens, refugees and so on) to take a name in the form First Name, Middle Initial, Last Name, I contend that my rights are being violated by depriving me of my lawful name in all transactions handled by data processing.

Leopoldo Valdivia Uriazar
Manager, Software Development
Escondido, Calif.

LETTERS

Cobol and GOTOS

For years now, the pages of *Computerworld* have displayed the controversy over the use of the GOTO statement in structured Cobol programs. The question seems to be, must it be completely banished or can it be used sparingly?

That question should be tied to another question: How suitable is Cobol for writing structured, self-documenting code? The answer is Cobol is almost perfect, but almost perfect is not good enough for this purpose. The ideal is to produce code that any non-DP professional can pick up and understand immediately.

The proposed abolition of the ALTER statement is a step in the right direction, but this and other changes don't go far enough toward meeting the ideal. The following list of changes in Cobol are proposed with the goal of making the language work the way it was intended.

1. Implement a case structure. In Cobol, it might look something like this:

```
FOR THE CASE WHERE
TAX-SCHEDULE IS EQUAL TO 'A'
PERFORM FIGURE-TAX-SCHEDULE-A
TAX-SCHEDULE IS EQUAL TO 'B'
PERFORM FIGURE-TAX-SCHEDULE-B
TAX-SCHEDULE IS EQUAL TO 'C'
PERFORM FIGURE-TAX-SCHEDULE-C
ON NO SUCH CASE
DISPLAY 'ERROR' - TAX SCHED.
USE CODE UNKNOWN
EXHIBIT NAMED TAX-SCHEDULE PAYER
MOVE B TO RETURN-CODE.
```

2. Abolish the THRU option of the PERFORM verb. Abolish the EXIT statement. These options can get you and the reader of your code into all kinds of trouble. Stick to one entry point and one exit point to a paragraph. A performed paragraph should be like a called module, except that it shares data with the rest of the program. If there is a chance for an error in the performed paragraph, check some kind of return code after the PERFORM, just like after a module call.

3. Deimplement nested IFs. These are too unwieldy and they impede understanding. Use nested performed paragraphs instead; you get more self-documentation because the paragraphs have to be named:

```
IF FUNCTION-CODE IS EQUAL TO 'Q'
PERFORM QUERY-ACCOUNT
ELSE
PERFORM UPDATE-ACCOUNT.
QUERY-ACCOUNT,
IF FUNCTION IS EQUAL TO 'NAME'
PERFORM QUERY-BY-NAME
ELSE
PERFORM QUERY-BY-NAME.
UPDATE-ACCOUNT,
IF FUNCTION IS EQUAL TO 'ADD'
PERFORM ADD-ACCOUNT
ELSE
PERFORM CHANGE-ACCOUNT.
```

4. Banish the GOTO statement. There is no logical basis for it. A machine, physical basis, yes, but that is what you are trying to get away from. It is true that GOTOS can be used for a quick EXIT from a paragraph in an error situation, but you aren't trying to be efficient. That is for engineers to worry about, not writers of software. You are not just programming, you are writing a document that could be examined in a court of law some day. Your document will probably (and should) be examined by management and certainly by maintenance pro-

(Continued on Page 46)

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TANDEM

NonStop Computing Systems

(Continued from Page 64)

grammers. Of course, not everyone has a computer with the kind of horsepower and storage to support this disdain for efficiency; but don't forget, machine power is cheaper than people power, and the trend is becoming more pronounced.

Changes 3 and 4 could not be implemented unless Change 1 was made, since there is no case structure in Cobol at present, and you must either use nested IFs or GOTOs to simulate it. Cobol is obviously the

product of a rebellion by managers who were tired of being led around by slick, technocratic computer programmers. It should not be forgotten why the language was invented, and its enhancements should keep the original purpose.

Philip L. Findling
Wisconsin Department of
Health and Social Services
Madison, Wis.

LETTERS

Missing VM/CMS

The recent in Depth by Charles Corneli ["Options In 4300 Software," CW, Nov. 16] made no mention of VM/CMS as an appropriate environment for computing. As other articles in *Computerworld* have stated, VM/CMS is an increasingly popular system for all computing environments.

In many cases, CMS can eliminate the need for "guesstimates" (or, more aptly, "intruder") operating systems under VM, and provide more user-friendly computing at lower cost.

VM/CMS is not a universal solution, but in an article labelled as an in depth coverage, it deserved mention.

Gabriel Goldberg
The Mitre Corp.
McLean, Va.

To Thine Own Self...

As the editorial "Getting Ahead in the '80s" [CW, Nov. 2] states, "Promotion-minded... people... need... influence... to reach... goals... prestige... a condition of mystique and clout... image... [and] being pegged... high in the minds of... management." However, the only expectations the wise man has to live up to are his own.

How other people perceive a working group may pre-empt their evaluation of the individual, but then who really said that perception and reality were a paired set, or that creativity came in well-labeled packages?

More often than they might (or appear to) think, individual aspirations desiring to succeed — even if only on a purely personal basis — need to identify their interests with those who employ them. They need to exercise the same dedication in matters entrusted to them as they would in their own affairs. To do less, subject to conscience's limitations, is to aspire futilely.

Goals at which we would aim require consideration of a reasonable path to achievement, else they are but a dream posing as a goal. Expending a serious, concerted (not concealed) effort earns one the benefit of meaningful experience, which in turn has altered or upset many a theory, notion or concept. Thus we may learn, grow and even get ahead.

The foregoing attitude seems to have worked in the past and should be worth anyone's honest effort, instead of attention to image, mystique, clout and so on, which are just tricks to those with the intelligence to observe and discern them.

Your employer may short-change you, yet why should you want to shortchange yourself?

Wilford Ling Woodside
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Packages For Finance Fit IBM 4321

SAN FRANCISCO — Walker Interactive Products here has unveiled a group of financial application packages for use on IBM and plug-compatible mainframes, including the recently announced IBM 4321 computer running under Small Systems Executive (SSE).

The product line is called Integrated Interactive/Financial Applications (II/FAX). Initially, it will include accounts payable (II/AP), purchasing management (II/PO) and inventory and materials management (II/MM) modules, plus an additional accounting system.

The II/FAX line includes an Interactive System Customization Facility (ISCF), which is designed to enable end users to tailor and customize system operation, screen formats, management reports, data validation characteristics and accounting specifications.

ISCF is intended to enable financial personnel to enable and change system characteristics from a terminal, the vendor said, adding that specification (Continued on Page 48)

Claims Power Doubled Cincom Extends MRPS Line

CINCINNATI — Acknowledging that about 60% of its computer base is made up of manufacturers, Cincom Systems, Inc. recently unveiled several additions to its Manufacturing Resource Planning System (MRPS), including real-time processing capabilities, availability on Digital Equipment Corp.'s VAX-11 supermini and the addition of a master production scheduling system module.

The vendor claimed that the extensions to the package's on-line facility, which already included on-line data entry and on-line query, will more than double its processing power.

On-line MRPS was designed to use Cincom's on-line control monitor Series 80 Environ/1 or IBM's CICS. Environ/1 reportedly provides the user with task-level recovery with full restart and reprocessing capabilities. Using IBM's CICS, the user can back out from the last transaction with dynamic transaction backout and rekey only the information that was being processed at the point of failure.

The basic MRPS package's be-

ginning price is \$65,000, with an annual renewal maintenance charge of 10% of the purchase price. The beginning price of the on-line module is \$5,000.

Support for VAX-11

The initial implementation of MRPS for the VAX-11/780 and 750 superminis incorporates an integrated manufacturing control system built around Cincom's Minicomputer Total data base management system. Mike Ehrenberger, director of solutions software for Cincom, said MRPS' implementation on mainframes and minicomputers is identical, eliminating the need for a double learning curve for customers with both size systems.

Minicomputer MRPS, like its mainframe counterpart, combines modular components including the foundation module, which encompasses material control, systems control and standards control; the manufacturing material planning system; and the master production scheduling system. The package for the VAX is

said to contain real-time capabilities for bill of material, inventory control and orders and requirements control. Cincom said DEC's forms management system also is a key component of the package. Cincom's Mini-computer Total and DEC's FMS are prerequisites for MRPS on the VAX.

The price of MRPS on the VAX-11 begins at \$64,000, the firm said.

Production Scheduling

Cincom also unveiled the Master Production Scheduling System (MPSS) module for the MRPS package to add corporations in the design and management of a master production schedule.

MPSS consists of master production scheduling and resource capacity planning components. The master production schedule reportedly provides facilities to formalize relationships between top-level production planning activities and the supportive master production schedule. It also is intended to create and interpret trial-fit master production schedules before performing the detailed planning required by materials requirement planning, the vendor said.

The other component, resource requirements planning, is said to provide facilities to interpret master production schedules orders in terms of required resources in order to review resource availability.

MPSS is designed to enable users to plan and control resource and capacity data at a product's family level. This is intended to reduce the number of items for management to review and thereby improve forecast accuracy.

The MPSS module is priced at \$35,000, Cincom said from 2300 Montana Ave., Cincinnati, Ohio 45211.

BSP, Normalization Approach

Going Data Base — Some How-Tos

By Glenn Whittington

Special to CW
Once an organization decides to "go data base," how does it accomplish a data base environment?

IBM has formulated a methodology that embodies a new approach to both systems and data base design for "data base" systems. Its methodology has been formalized and is taught as the Business Systems Planning (BSP) approach and as the Normalization Process of data base design.

If you are not already familiar

With the decision has been made to establish a data base environment, what is the next step for an organization? In this third and final part of the series, Whittington describes data base design methodologies that companies can employ.

with these processes, contact your own local IBM representative and explore the applicability of these methods at your installation. If you decide that

these approaches could or would not work at your installation, then modify, change and improve the processes to make them work at your shop.

What follows is the results of just such a process.

IBM's BSP and Normalization approaches were modified and renamed Modified (or Mini) BSP and Normalization. The Mini-BSP approach is simply to perform a full BSP as taught by IBM, but perform it only to a system level.

(Continued on Page 48)

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Programmed Alternatives

Within the CICS environment, the need for a sort facility continually arises. Your end users want to be able to dynamically specify the sequence of output displays. Your application programmers want to do binary searches on out-of-sequence tables. Your systems programmers want VSAM records added in sequence for efficiency. The list is endless.

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HP 3000, System/34 Get 'A/P Plus'

NEEDHAM HEIGHTS, Mass. — McCormack & Dodge Corp. announced here that its accounts payable package, A/P Plus, now is available for use on Hewlett-Packard and Co.'s HP 3000 and IBM's System/34.

A/P Plus reportedly supports multiple corporation and multi-bank processing, using one set of files. Processing is said to be user defined. The package includes modules for duplicate invoice

screening, error-recycling, purchase price variance, employee travel and expense and general ledger interface. There also is a check reconciliation subsystem.

A/P Plus is priced at \$19,500 for the HP 3000 and \$17,000 for the IBM System/34. Until Dec. 25, A/P Plus is being offered at \$4,500 less than the current invoice price; the vendor said from 560 Hillside Ave., Needham Heights, Mass. 02194.

Data Base Methods Probed

(Continued from Page 47)

There are some obvious limitations and rework situations created by this method, but it still allows a shop to consistently design toward the data base environment.

Via Naturalization Process

With the knowledge of your data that will be gained from the Mini-BSP effort you can be in a position to do a data base design via the Naturalization process.

This involves linking data together based on their natural relationships rather than their processing relationships. Each piece of data can be identified, classified as to its use and effects on other pieces of data and linked together based on these natural relationships within the data.

The data base systems' design approach, in general, is a five-step process that involves performing a data analysis, designing the data base, determining the output requirements for your specific application, determining the input data needed and determining the processing necessary to satisfy your specific applications requirements.

As you proceed through the remaining steps of the data base environment design approach, the change is still mostly psychological, not technical. Data input systems are concerned with capturing data at its source, editing it as accurately as is possible without becoming involved in its use and getting it into computer-readable form.

The output systems should operate independently of the input systems and are concerned with satisfying information output requirements. This should in no way require any system dependence on the input systems.

The storage and processing system embodies the logic and processes necessary to satisfy departmental objectives relative to this specific use of corporate data.

This approach of computer systems design represents an attempt to achieve implemented computer systems that recognize and handle corporate data as corporate data, that retains the ability of all individual departments to use that data in ways that meet individual departmental needs and better insures the most accurate and timely data is available for meeting departmental needs.

II Can Work

Data base can work. It has worked. It will continue to work. But it can only work by design, not by accident. To only use the tools of data

base is not sufficient.

To "go data base" means to abandon the traditional approach to computer system design. It has been said that to "go data base is to make a revolution that it is an evolution."

While this is more true than not, the employment of such ideas and concepts as Mini-BSP and the Naturalization process of data base design can perhaps make the revolution a bit more evolutionary.

Regardless of which methodology you follow to do data base systems design, some considerations should be kept in mind.

- Be sure your applications system handles logical recovery situations.
- Design your system with performance issues clearly in mind.
- Design availability into your system, not out.
- Your system, as implemented, should be user-oriented.

Whittington is the manager of data administration for Hestek Corp.

System/34 Gets Modeling Aid

DAX BROOK, Ill. — PCR, Inc. has introduced a financial modeling package for the IBM System/34 computer.

Easyplan reportedly allows users to design spread sheets, enter data into the sheets, calculate, manipulate data, conduct hypothetical analyses and consolidate spread sheets.

The introductory price is \$495 from the firm at 2021 Midwest Road, Oak Brook, Ill. 60521.

'II/FAX' Works On IBM 4321

(Continued from Page 47)

changes can be made in real-time and are effective immediately. Walker described ISCF as being complementary to IBM's design concept for its recently announced SSX operating system for the 4321.

The II/FAX product line reportedly is interactive under the SSX environment. The vendor said the ISCF capabilities for Walker's existing products will be available Jan. 1 on all IBM and plug-compatible mainframe environments. The II/FAX systems for SSX will be available later in the first quarter of 1982.

Each of the II/FAX modules is priced between \$40,000 and \$50,000, the vendor said from 100 Mission St., San Francisco, Calif. 94105.

'DCMS' Update Features Tie To Rerun/Recovery System

CHERRY HILL, N.J. — Value Computing, Inc. (VCI) has announced an update of its Data Center Management System (DCMS) for IBM and plug-compatible mainframes, which includes enhancements to the package's automatic job submission and on-line job tracking components.

DCMS reportedly now features an interface to University Computing Co.'s UCC 11 rerun/recovery system, enabling users of that system to integrate its functions with the DCMS job submission and tracking facilities.

VCI also introduced an event post facility for its DCMS customers. The facility is designed to mark the occurrence of a prescheduled event in order to trigger an automatic process. For example, it reportedly can automatically mark the shutdown of an on-line application, which then allows a successor batch application to begin its run without delay.

Also featured in the revised package is JCL validation — an on-line facility that is said to read submitted JCL, analyze it for both syntax and accordance with local standards and then to issue diagnostic messages that permit quick correction and resubmission of JCL streams.

Enhancements that expand telepro-

cessing support by DCMS include a new CICS interface for communications with CICS/VS terminals, RJE/JES2 support, multiterminal communications under Applied Data Research, Inc.'s Roscoe, automatic invocation of TSO editors upon entry of an EDIT command and modified internal-reader system management facilities exit modules for easier installation.

The basic purchase price of DCMS ranges from \$39,000 for systems running under VS1 to \$58,000 for those running under MVS. The JCL validation option is available for \$5,900 from VCI, 498 N. Kings Highway, Cherry Hill, N.J. 08034.

MSA Adds Budgeting Module To 'General Ledger' System

ATLANTA — Easy-Plan, a real-time, interactive budgeting module of its General Ledger accounting system for IBM and plug-compatible mainframe users, was announced here by Management Science America, Inc. (MSA).

Easy-Plan was designed to enable accountants and financial managers to enter budget amounts on-line, review on-line budget spread sheets and ask a series of "What If" questions and then access updated results instantly.

The software is said to permit the creation of on-line spread sheets for each budget account or center in the MSA General Ledger package. Accountants and managers can specify

accounting relationships, use automatic projection techniques and build budget models using information already maintained in General Ledger budget files. Easy-Plan reportedly provides automatic generation of finalized budget entries to the MSA General Ledger package.

Easy-Plan is available with the MSA General Ledger package for IBM OS and DOS/VSSE environments. It operates under a variety of on-line monitors including IBM's TSO, Interactive Computing and Control Facility and CMS. The price ranges from \$20,000 to \$25,000, depending on options selected. MSA is headquartered at 3445 Peachtree Road N.E., Atlanta, Ga. 30326.

'Finplan' Out For System/34

FARMINGTON HILLS, Mich. — Accenttech Systems, Inc. announced Release 4 of its Financial Planning and Modeling System (Finplan) package for IBM's System/34. The company also announced a price change effective Jan. 1.

Release 4 reportedly includes features which expand its computation ability, as well as its industry usage potential. One new feature allows users to automatically duplicate an individual model into multiple new models, the vendor said.

Flexible report titles and captions also have been added, according to the vendor. Users may change default descriptive information according to the desired report formats, the vendor said.

Finplan will be available for a one-time fee of \$1,350 through the end of December. After Jan. 1, the price will be \$1,850, the vendor said from Suite 108, 28104 Orchard Lake Road, Farmington Hills, Mich. 48018.

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NCR 'EZ-Key' Backs Move From Batch to On-Line

DAYTON, Ohio — NCR Corp. here has released a source data entry software called EZ-Key, which is designed to assist users converting from batch to on-line operation.

The system reportedly enables users to enter, modify and validate data on-line for subsequent processing by their existing batch applications programs. Data is entered through video display terminals under the control of user-defined screen formats and stored in batches on a disk-based data entry file.

EZ-Key is said to control and validate all input through a combination of batch totals, check digits, range checks and arithmetic operations. The software also maintains operator and job statistics that may be printed as needed for management analysis.

The software includes a suite of utility routines that are used to list batch names, print batch contents, copy batches to sequential files and delete batches from the data entry file, the vendor said.

EZ-Key, which operates with NCR's Virtual Resource Executive software, reportedly requires no user programming and accommodates data entry in any of 10 national language sets. The vendor said multiple languages can be used simultaneously on a single system.

NCR's EZ-Key has a one-time license fee of \$1,500 or a monthly fee of \$42, the vendor said from its headquarters in Dayton, Ohio 45479.

NCSS Operating System On T/S Net Updated

WILTON, Conn. — National CSS, Inc. (NCSS) has introduced Release CSS.304 of the operating system used with its national time-sharing network.

The updated release reportedly includes updates to 233 of the 276 routines that comprise the VP/ CSS system and the addition of new routines.

The most significant system improvement, according to the vendor, was the enhancement of memory management. Users now have the ability to specify both maximum and minimum dynamic limitations of virtual memory size. Additionally, the batch process-

ing facility was enhanced to offer users more control over the scheduling and execution of batch jobs, the vendor said. Multiple batch jobs now can be run with different control Execs.

Other system improvements reportedly include new CSS commands, an interactive tape catalog facility, enhanced security, disk terminal and spooling-related facilities.

The entire CSS.304 release is documented in seven manuals, a spokesman said.

NCSS is located at 187 Danbury Road, Wilton, Conn. 06897.

Dacco Software Upgrades 'Lcat'

ALTAMONTE SPRINGS, Fla. — Dacco Software Systems, Inc. has released an upgraded version of its Loan Closing and Tracking (Lcat) software for lending institutions with NCR Corp. systems.

Lcat consists of the following modules: loan applications register system, tracking, document preparation and miscellaneous. Optional software includes payroll, accounts payable, fixed assets and general ledger. Lcat currently runs on NCR 8200 and 9020 series under Imos II and Imos III operating systems. The software is designed to be on-line and interactive. Pricing starts at \$7,500 from Dacco Software Systems, P.O. Box 291, Altamonte Springs, Fla. 32701.

TFC 8500 Gains Distribution Aid

LOS ANGELES — TRW-Fujitsu Co. (TFC) has announced an on-line distribution management package for its TFC 8500 small business system.

The TFC Distribution Management System's (DMS), written in Cobol and supported by the TFC Universal Operating System, consists of modules that can operate independently or as part of an integrated business system, the firm said. The 10 modules included in the package are order processing from entry point through invoicing, accounts receivable, inventory control, sales analysis, accounts payable, general ledger, financial report writer, payroll, purchasing and fixed assets.

Information added or updated in one module is automatically directed to other appropriate modules.

DMS will be available in the second quarter of 1982. Pricing ranges from \$2,000 for an individual module to about \$30,000 for a full-blown system. The price includes installation, one day of training and documentation.

TFC will also operate a toll-free hotline for the product, it said from 9841 Airport Blvd., Los Angeles, Calif. 90045.

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sionals who have specialized knowledge of different types of business and the operational requirements of different industries.

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Easytrieve IPF Version 2.0' Debuts

OAK BROOK, Ill. — Panaphonic Systems, Inc. announced here Version 2.0 of its Easytrieve Interactive Prompting Facility (IPF), an on-line interactive facility for Easytrieve users operating in IBM's TSO, TSO/SPF, Interactive Computing and Control Facility (ICCF), CIMS and CIMS/SPF environments.

The prompter is described as being in a line-by-line format for TSO, CIMS and ICCF and in a full-screen format for structured programming facility environments.

Version 2.0 is said to include prompts for any required work fields and coding of calculations and data movements, within the record selection process, when required. It reportedly provides users with the

choice of submitting the generated program for background execution or for executing it on-line.

Using an additional capability of IPF, the user can code any Easytrieve statement, the vendor said, adding that the user may complete an entire program in this facility or be prompted for the output section of the program. Panasoft, Panaphonic's computer auditing system, also may be used in this facility.

The features of IPF include a question/answer terminal session, which assists a novice user in producing reports. IPF is designed to ask a series of questions relating to the library, selection criteria, sort and control specifications, summary report indication, titles and list fields. Each user

response is validated, with descriptive diagnostic messages presented when an invalid response is entered, the vendor said.

Once report programs are created, they can be saved on a standard operating system data set, checked on-line for correct Easytrieve syntax, or run on-line with the report output routed to the user's terminal or the system's printer.

Customers who have Easytrieve IPF Version 1.0 will be contacted by Panaphonic regarding their receipt of Version 2.0 at no additional charge. For other Easytrieve customers, the product will be released Dec. 15, the vendor said from 709 Enterprise Drive, Oak Brook, Ill. 60521.

Financial System Said to Automate Consolidation

AUSTIN, Texas — An enhancement to its decision support software that is said to provide the capability of fully automating consolidation processes was unveiled here by Execucom Systems Corp.

The Interactive Financial Planning System (IFPS) is designed for use on miniframes and most superminicomputers. The enhancement, included in Release 8 of IFPS, provides "unified consolidation," according to the vendor.

Additional capabilities included are a sort facility in the report generator, a command to replace line number references with variable names for increased readability, the option of including "What If" and goal-seeking statements as part of any output and the ability to override existing model variable names when accessing data from an IFPS data file.

Other features are a depreciation subroutine designed to reflect the provisions of the Capital Recovery Act, the ability to handle situations where data is "not available" and additional capabilities with command file parameters.

Release 8 of IFPS costs \$56,000 and is available immediately. The vendor may be reached at P.O. Box 9756, Austin, Texas 78766.

Modeling Tool Runs on 1100s

NEW BEDFORD, Mass. — Release 3RD of a modeling package called Stochastic Network Analysis Program (Snapp) was announced here by Le Raux International, Inc. for use on Sperry Univac 1100 series computers. Snapp 3RD is designed to perform capacity planning and performance evaluation studies of centralized computer systems of manufacturers. It is said to allow the user to divide system work loads into various classes to provide for the accurate modeling of CPU overhead associated with chosen work loads such as batch, time-sharing and transaction processing.

The package reportedly is aimed at performance analysts who require flexibility in their model-building exercises. The vendor said users can choose the queue disciplines and work load profiles of the system being modeled rather than have these characteristics predefined by the software.

Snapp Language 1 (Snapp/1) is the user interface language used by Snapp 3RD. Its interface capabilities are said to allow the performance analyst to define and manipulate a model, as well as to produce performance-related reports and graphs.

The package reportedly incorporates estimation mathematics designed to enable users to build more accurate models.

Snapp 3RD is available under an annual license agreement at a charge of \$5,000/year, including support and documentation, the vendor said from 3900 Acushnet Ave., New Bedford, Mass. 02745.

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Transaction Processor Runs on HP 3000

MOUNTAIN VIEW, Calif. — An enhanced on-line transaction processor for Hewlett-Packard Co. HP 3000 users has been announced by Computing Capabilities Corp.

Insight II is said to feature generic search capability, MPE file system support including Kasm, multiple image data base support (up to 16) and support for image logging.

Insight II is priced at \$7,500, or lower for current user upgrades. A demonstration Insight II is available for \$50 from the firm at Suite 223, 465-B Fairchild Drive, Mountain View, Calif. 94043.

Job Cost Tool Works on DG CPUs

MENLO PARK, Calif. — Automation Consultants has a job cost package for the Data General Corp. Eclipse, Nova and Micronova.

Job Cost keeps track of operating costs in user-defined categories such as labor, materials, outside services and overhead. It is intended to help managers identify the most profitable jobs and job categories, to meet deadlines by monitoring the progress of every job and to take cor-

rective action on unprofitable areas.

Written in Basic, the software is said to encompass interfaces to Electronic Data Systems' payroll, accounts receivable and accounts pay-

able modules.

Job Cost is priced at \$5,000, with an additional \$1,000 for installation, the vendor said, from Suite 204, 610 Santa Cruz Ave., Menlo Park, Calif. 94025.

UCC Offers Staad III To Service Bureau Users

DALLAS — Structural Analysis and Design III

(Staad III), is now available from University Computing Co. (UCC) for its service bureau users.

The package is a structural engineering program with design and graphics capabilities similar to the firm's Strudl-II package, the vendor said.

Developed by Research Engineers of Cherry Hill, N.J., the package contains the complete 1980 American Institute of Steel Construction (AISC) tables for steel design, code checking and member selection.

Its problem-oriented input language and set of processing programs allows engineers without a programming background to use the package.

The package allows structural engineers to describe the analysis or design problem, ask for calculations and state requests for output without understanding solution procedures. Output can be an input listing, internal data tables and requested data results or design, UCC said.

Commands are received on batch cards or interactively by a keyboard.

Package Maintenance

Research Engineers will enhance and maintain the package and is currently planning a new release that will give Staad III built-in dynamic capabilities as well as concrete design.

The cost of the service ranges from 30 cents to 55 cents per application resource unit. The package is not for sale.

The vendor is located at UCC Tower, Exchange Park, Dallas, Texas 75235.



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Merger Forecast Modeling

EPS Bases Merger / Acquisition Tool on FCS

SAN FRANCISCO — A merger and acquisition analysis planning tool built around its Financial Control System (FCS-EPS) package was announced here by EPS, Inc.

FCS-Merger, as the product is called, is designed to enable users to select from more than 20 primary commands to create multiple versions of the histories and forecasts of corporate entities and to generate a given merger.

The software's features include pre-coded forecasting and model generating income statements; balance sheets, funds statements and valuation of candidate company; a pre-coded merger model; and handling of synergistic effects and consolidation eliminations.

Merger is available on a variety of systems that are supported by FCS-

EPS, including IBM, Digital Equipment Corp., Sperry Univac and Honeywell, Inc. equipment. It is priced at

\$12,000 for a perpetual license, the vendor said from 1788 Technology Drive, San Jose, Calif. 95110.

Software Generates OS JCL

LEWISBURG, Pa. — Rodin Software announced the release of the Applications and Operations Interface System (Aoin), which is designed to create IBM OS JCL procedures interactively.

Aoin is said to generate standardized JCL up to four times faster than the usual manual method. The generated JCL reportedly is free of syntax errors and can be

used on any machine that supports IBM's TSO or CMS.

The software features a standards table that can be modified to produce JCL that will conform to the specific standards of an installation. It is being offered on a perpetual lease basis for \$5,000. A 30-day trial period is available for \$200 from the vendor at Box 119, Lewisburg, Pa. 17837.

'Inform' Gets Code Generator

WELLESLEY, Mass. — Cortex Corp. is offering an Object Code Generator (OCG) for its Inform application development system available for users of Digital Equipment Corp. PDP-11 minicomputers from the PDP-11/23 and the VAX-11/780 under RISC, IAS and VMS operating systems.

The OCG complies Inform's internal instructions for the application. This compiled code usually runs 60% to 90% faster than its interpretive equivalent, Cortex claimed.

Inform OCG tasks need only the Inform data manager to run, the vendor noted. Inform OCG is priced at \$15,000 and is separate from Inform, Cortex said from 55 William St., Wellesley, Mass. 02181.

Pascal Compiler Gains Optimizer

NEW YORK — Advanced Computer Techniques Corp introduced what it claims is a machine-independent optimizer as an additional feature of its Pascal compiler.

The Pascal product is implemented as a large superset of the draft Ansi standard, the IEEE standard and the ISO standard, the vendor said. In addition to the standards, other language enhancements are said to include constant expressions, initialization of variables, support of string types and external procedures.

The "machine-independent" optimization techniques include invariant code movement, strength reduction, common subexpression removal and last-use information.

Standard Constructs

The Pascal compiler reportedly is itself implemented using standard Pascal constructs and is auto-compatible in order to facilitate the rehosting process.

The compiler is said to generate intermediate code, which is then mapped onto the target architecture, generally as relocatable object code. Further machine-dependent optimizations are performed in the code generation phase.

The basic price for the Pascal compiler is \$79,000, which includes all documentation, source programs, distribution rights and product support, the vendor said from 437 Madison Ave., New York, N.Y. 10022.

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IBM Datamaster Package Designed for Physicians

ATLANTA — Software designed to help physicians boost productivity has been announced by the General Systems Division of IBM.

Designed to operate on IBM's Datamaster desktop business computer, the Physician Management System includes family or patient billing, insurance claims processing, account inquiry, recall notices, budget payment plans, labels and index cards and management reports.

Usable in a practice with up to four doctors and up to 8,000 patients, the system will be supported by a telephone hotline service operated by the Medical Systems Division of Dytatron Corp.

The program carries a one-time fee of \$6,500. The Datamaster computer supporting two physicians costs \$9,950; the Model 912 Diskette unit, required for up to four physicians, costs \$4,265.

The IBM division can be reached through P.O. Box C-1645, Atlanta, Ga. 30301.

'R-Basic' Fits IBM Series/1

MARLOW HEIGHTS, Md. — Radix II, Inc. has announced R-Basic, a multiuser extended-Durham Basic pseudocompiler for the IBM Series/1.

R-Basic runs under EDX, is fully reentrant and supports additional extensions such as chaining; overlays; global common; random-, indexed- and sequential files.

The package is priced at \$1,500 and can be delivered immediately, the vendor said from 4584-4588 Beech Road, Marlow Heights, Md. 20031.

SL-1 Users Gain On-Site Control

NASHVILLE, Tenn. — Northern Telecom, Inc. has announced a software line to provide on-site cost control for the firm's SL-1 business communications systems.

Omnifacts is designed to integrate the capabilities of the firm's distributed data processing products with the SL-1 systems. The five packages offer services ranging from collection of call detail records (CDR) to on-site automated report processing.

Each package uses the firm's Model 500 series DDP systems to process call detail records received from the SL-1's RS-232 asynchronous port. The CDR Pollable Package costs \$11,400; CDR On-Site (basic capability) costs \$25,500; CDR (resale of services) costs \$25,500; CDR On-Site (full capability) costs \$34,900; and CDR On-Site (full capability with directory) costs \$62,700, a spokesman said from 259 Cumberland Bend, Nashville, Tenn. 37228.

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· P R I V A C Y ·

A History of Computer Matching in Federal Government

By Jake Kirchner

"The ability to search through hundreds of thousands, or even millions, of records to identify individuals with particular characteristics of interest is at once the most important gain and the most important source of potential harm stemming from the automation of large-scale personal data recordkeeping systems."

— Privacy Protection Study Commission, 1977 Final Report

Ten people were indicted in Chicago recently for allegedly defrauding a variety of federal agencies of more than \$500,000. The indictment stemmed, the government said, from a computer matching operation to find people receiving benefits under multiple identities.

The investigation was just one of many the government is conducting in which computer matching techniques are being used to ferret out welfare cheaters, government loan defaulters, food stamp chiselers and others whose illegal actions are cost-

ing government agencies, at all levels, millions if not billions of dollars a year.

The practice of matching various computer files, such as welfare rolls against federal employee files, to identify potential defrauders of government programs is not new. The concept has been around for more than a decade, and projects utilizing the technique were very popular in the early years of the Carter administration.

At that time, computer matching was seized upon by government

agencies that were under the gun for supposedly inefficient and wasteful management. The technique let them quickly scrutinize thousands of personal records for possible violations.

So-called "hits" — records appearing simultaneously on different computer tapes — were then separated for closer investigation.

In theory, millions of people could be investigated this way for any number of possible violations at very little cost and trouble. In practice, however, the process was later found

COMPUTER MATCHING IN DEPTH

In Depth/2

not to be very cost effective.

A number of the largest federal agencies eagerly took up computer matching in the late 1970s only to see the projects fall into disfavor primarily because of their implications for personal privacy. Critics of computer matching pointed out the technique amounts to a fishing expedition among unrelated computer files, subjecting government benefits recipients to unwarranted invasion of their personal records' privacy with

little or no prior indication that the recipients had committed any crime at all.

Civil liberties advocates likened the matching operations to the creation of a central national data base of those recipients. They argued that linking dozens of disparate computer systems is no different from creating one large system. Over the last 15 years, all suggestions for a national data base of citizen records have been immediately rejected by Con-

gress as an unwarranted threat to privacy.

Eventually, after about two years, the enthusiasm for computer matching programs under the Carter administration waned because of a widespread fear they violated, in spirit at the very least, the 1974 Privacy Act.

'Excess of Caution'

But now, the Reagan administration, evidently choosing to ignore

the lessons learned several years ago, is committed to a resurgence of computer matching projects. Calling related privacy laws "an excess of caution," Labor Department Inspector General Thomas F. McFriede recently said the matching methods do not violate the Privacy Act.

Privacy considerations will not stand in the way of the administration's broad application of these techniques, McFriede indicated. The administration, he said, is determined to clear away any obstacles to widespread computer matching programs.

Because these projects require disclosure of federal records protected by the Privacy Act, agencies must cite some legal justification under that law to transfer the data back and forth for matching purposes. Now, as during the previous administration, the legal basis for the matches is said to reside in a provision of the privacy law that allows agencies to disclose supposedly confidential personal records for a variety of "routine uses."

The provision was included in the law because Congress recognized there are instances when reasonable disclosures are necessary for conducting day-to-day government operations. However, reliance on the routine use provision as a loophole for wholesale disclosures of personal records was initially rejected by both Congress and federal agencies when the Carter administration first began computer matching programs in 1977.

In fact, it was only after several matches were already under way and no better justification could be found that the Carter administration settled on claiming the routine use provision as justification for the disclosures.

Overall, the history of interagency bickering, political posturing and legal expediency that marked the scramble to justify the early computer matches of the Carter years reveals that considerations of law took a backseat to the ambitions of a powerful Cabinet member, the law enforcement zeal of the Justice Department and Jimmy Carter's desire to be remembered as a champion of personal privacy.

Moreover, a constant theme in the lengthy and convoluted interagency deliberations in 1977 and 1978 on how to justify the matching programs was not a concern for privacy protection, but a constant effort to protect the White House and executive departments from the bad press the matches were generating.

Today's computer matches rely on guidelines set in 1979 by the Office of Management and Budget (OMB), supposedly to protect privacy and guarantee matches will not be conducted unless they can first be shown to be cost-effective ways of combatting fraud. But the guidelines were considerably watered down

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COMPUTER MATCHING IN DEPTH

during a year-long development process.

And when finally published, the guidelines firmly established the notion that computer matches can be conducted legally under the Privacy Act's routine use provision, despite the fact the government had known for years that use of that loophole for matching was, if not technically illegal, at least contrary to the spirit of the privacy law and the intent of its congressional sponsors.

Project Match

To fully understand the emergence then, and reemergence today, of large-scale computer matching programs as a standard administrative tool, one has to go back to the original Project Match, which in 1977 started the privacy controversy that is still unresolved.

Designed to identify government employees who were cheating on welfare, the project set off a year-long interagency dispute over its legality. This dispute eventually involved President Carter himself in an effort to find a legal justification for the program that would be palatable to government agencies, Congress, privacy proponents and the government workers whose records were the subject of the matching project.

Publicly unveiled with much fanfare in November 1977 by then Secretary of Health, Education and Welfare (HEW) Joseph A. Califano Jr., Project Match consisted of comparisons of computer tapes of welfare roles and federal payroll files in 18 states, New York City, the District of Columbia, Norfolk, Va., and northern Virginia area — areas with high concentrations of government workers and welfare recipients.

The program was aimed at weeding out government employees who were illegally receiving benefits from the HEW Aid to Families With Dependent Children (AFDC) program. The project was being conducted, Califano reassuringly pronounced, "under procedures that are aimed at ensuring the privacy rights" of those whose records were being examined.

Questions of Legality

Even at that early date, despite the positive face Califano put on the project, it had already raised serious questions of legality. According to documents obtained by Computerworld, administration officials were a good deal more uncertain than the HEW secretary about the privacy implications of Project Match.

In an Aug. 17, 1977 internal memo, drafted months before the unlaunched Califano called a press conference to tout Project Match, HEW lawyers noted in great detail the legal difficulties ahead for any agency wanting to participate in this kind of program.

The memo, from the HEW Office of General Counsel, noted the Privacy

Act "requires each federal agency that maintains a system of records... not to disclose any record from that system to any person or to other agencies without prior written consent of the individual."

The memo also noted that the Civil Service Commission (CSC) [since renamed the Office of Personnel Management], whose computer tapes of federal employee records were central to Project Match, was not willing to release the data under the routine

use provision of the privacy law.

Routine use, the memo noted, is "the use of such [a] record for a purpose which is compatible with the purpose for which it was collected." This provision, the HEW attorneys said, "implies that information will not be disclosed without some indication that a violation by the specific employee has occurred or might have occurred."

This section of the law extends to a person's government files protec-

tions consistent with constitutional guarantees against unlawful searches. The presumption of the Fourth Amendment of the Constitution is that a citizen's personal possessions will not be subject to seizure and scrutiny unless there is some indication he has committed or is about to commit a crime.

The thousands of government workers whose records were to be examined in Project Match were of course not individually suspected of

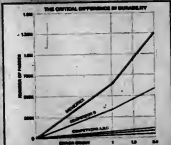
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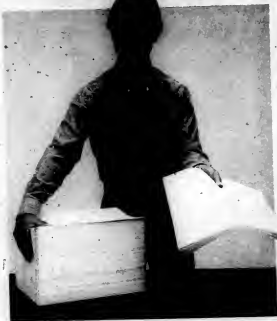
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IN DEPTH

illegally receiving welfare benefits; rather the government said it had reason to believe that some might have been receiving the benefits illegally.

A number of privacy advocates in Congress and in the private sector, most notably the American Civil Liberties Union (ACLU), pointed out this suspicion was probably not justification for subjecting all government workers to a broad investigation such as Project Match. "Fishing

expedition" was the term often used by the project's detractors.

The HEW memo went to great length discussing the possibility the government would be open to suits by workers on the grounds that their personal records had been disseminated without due process of law. The agency's lawyers struggled to come up with a way to conduct the match and still meet the "underlying intent of the Privacy Act."

To the agency attorneys, one of the

more troubling aspects of the project was the need to transfer the results of the match to other federal agencies when one of their employees was identified in the match. Not only would HEW be handling AFDC files and CSC personnel files, but before closer investigation could begin, any "hits" from the match would have to be sent back to the employing department to verify that the workers in question were indeed employed by the government. This could in-

clude record transfers among dozens of agencies. HEW knew this fast-flung transfer presented "difficult legal issues," the HEW memo said, because under the Privacy Act, HEW would ordinarily not be allowed to transfer records it received from CSC to other agencies. One way around this problem, the lawyers decided, would be to call the transfer something it was not.

"A better approach may be to treat this transfer as something other than a disclosure of records from a system of records to which the Privacy Act applies... it might be possible," the memo said, "to view the [employment] verification as 'assistance' rather than as a transfer of records."

In total, HEW produced 12 pages of tortuous logic trying to widen Privacy Act loopholes to allow Project Match, a project that in fact had already been approved. At that time, according to government documents, the necessary record transfer arrangements were already being made.

HEW, it seems, was not so much interested in determining if the project was legal, but in finding a way to make it look legal so it would not be liable to lawsuit and so that other agencies would be willing to participate.

Manipulation of Terminology

HEW's final approach to the problem demonstrates how that agency and many others in the bureaucracy lumbered through their daily operations. Nothing Project Match would include at least seven interdepartmental and intergovernmental transfers of personal information, HEW's attorneys suggested the various agencies involved could get around the Privacy Act by clever manipulation of terminology.

For one transfer, the process could be called a routine use, the HEW memo suggested; for another, it might be termed a disclosure for a Freedom of Information Act request; for yet another, it could stand as legal use of the data under the law that set inspector general powers.

The HEW legal opinion, however, was not very persuasive. Both CSC and the Department of Defense (DOD), the two agencies expected to produce the government employee data needed for Project Match, balked at releasing the information because of perceived Privacy Act restrictions.

One month after the HEW memo, CSC General Counsel Carl F. Goodman told HEW of his "concern about the compatibility of 'Project Match' with the restrictions placed on agencies by the Privacy Act of 1974."

In a letter explaining CSC's difficulty with releasing the data under the routine use provision of the privacy law, Goodman told Charles Ruff, HEW acting deputy inspector general, "It is evident that this information on employees was not collected with

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a view toward detecting welfare abuses.

"Secondly, and perhaps more significantly," Goodman said, "at the 'matching' stage there is no indication whatsoever that a violation or potential violation of law has occurred." It is only after the match, he said, that "a possible or potential violation of law warranting further inquiry is evident."

Goodman also noted that according to 1975 OMB guidelines on implementing the Privacy Act, "blanket requests for certain information on a broad category of individuals are not permitted."

Agencies Give In

Eventually, CSC decided it could not release the data under the routine use provision of the act. In the end, however, under pressure to give up the records, the agency did transfer the data. It justified its action by saying HEW could obtain it under the Freedom of Information Act — a justification that OMB, when later asked for an opinion, said was hard to defend.

The Defense Department, which at first refused to hand over its personnel data to HEW, later also relented. After conferring with OMB for policy guidance, DOD declared to transfer a "new routine use" of the data under the Privacy Act.

This DOD decision brought a quick response from former Rep. Richardson Preyer (D-N.C.), then chairman of the House Government Information and Individual Rights Subcommittee, which has oversight authority for the Privacy Act.

"Under the act," Preyer wrote Defense Secretary Harold Brown on Oct. 27, 1977, "a routine use, or data exchange, must be compatible with the purpose for which the records were collected." Referring to the OMB Privacy Act guidelines, Preyer added: "A routine use must not only be compatible with, but related to, the purpose for which the records are maintained. It is not at all clear how the disclosure to HEW relates to one of the purposes for which DOD maintains these records."

In a strong criticism of using the routine use provision to advance computer matching, Preyer told DOD: "The department cannot avoid the restrictions of [the law] simply by creating a new routine use... the provision is not to be used to avoid the conditions of disclosure established in the act unless there is clear authority to do so in another law. If agencies had the flexibility under the routine use provision to avoid these specific restrictions, there would have been no purpose for Congress' inclusion of these limitations."

Another Snag

Despite the growing controversy, Project Match went forward. However, another problem soon arose. There was confusion among govern-

ment agencies on whether and how to inform federal workers that their records were being passed around the bureaucracy for the purposes of the match.

At a Sept. 28, 1977 meeting while Project Match was already well under way, members of an interagency advisory group of federal personnel officials raised the question of whether employees and/or their union representatives should be notified of the record transfers.

The Privacy Act provides that the subject of the record system must be advised of the uses to which his data will be put. If new routine uses were to be established, the personnel officers felt, then employees would somehow have to be notified.

Asked for an opinion on this point, however, the Justice Department argued against notification, and CSC Executive Director Raymond Jacobson instructed the advisory group to follow Justice's advice. The Justice Department opinion was contained in an Oct. 7, 1977 letter to Jacobson from Assistant Attorney General Benjamin R. Civiletti, head of the department's Criminal Division.

Although the vast majority of the federal workers whose records were involved in Project Match, would hardly have considered themselves likely targets of a welfare fraud investigation, Civiletti said, "We view Project Match as a law enforcement program, designed to detect suspected violations of various criminal statutes in [government] operations."

In the Justice Department's eyes, the federal workers were no longer private citizens whose civil rights were of paramount concern, but were potential criminals, who

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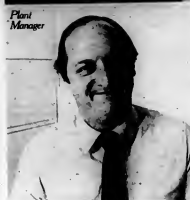
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should not be tipped off to the investigation. Civiletti wrote: "The premature discussion of a specific criminal matter with a putative defendant is in our view inimical to the building of a solid prosecutorial case."

"Conversely," he continued, "many of the employee names forwarded to [HEW] will quite legitimately be welfare recipients. We see no reason to prematurely apprise the former nor unduly alarm the latter."

By this time, the results of the ini-

tial matches were already being digested by the various government agencies involved in the project. Soon after, in November 1977, Califano publicly announced the results of those first matches.

At the same time, he began pushing for wider federal use of computer matching and began seeking access to private-sector employee records. While some companies cooperated with the government, others strongly resisted turning over their files.

All this exposure began generating increased public pressure on the government to justify the program, which in turn caused the government to look even harder for an airtight legal basis for them.

Typical of the outside pressure was a Dec. 8, 1977 letter to Califano from ACLU Director John Shattuck, which said: "The assumption within [HEW] seems to be that the benign purpose of Project Match insulates it from criticism based on privacy concerns."

The fact that this particular computer use is designed to eliminate recipients, however, does not in any way lessen the massive thrust it poses to individual privacy."

According to Shattuck: "The implementation of Project Match is particularly disturbing because it violates the spirit, if not the letter, of existing law. The Privacy Act of 1974 restricted the disclosure by federal agencies of personally identifiable information unless the subject has consented."

The ACLU vehemently objected to the tactic of calling the data transfers routine uses of the records under the 1974 law. The project was also criticized by Shattuck as a law enforcement tool: "We cannot think of any better example of a constitutionally proscribed general search than a random rummaging through the contents of massive records systems on the chance that 'something will come up.' Here, people become the targets of a search merely because they are members of a category — government employees or welfare recipients."

OMB Role

With public pressure mounting for justification of Project Match and with other, similar programs already in the planning stages, OMB, the White House office responsible for governmentwide management practices, began taking a more active interest in the controversy.

Late in 1977, OMB prepared a letter to Rep. Freyer to explain the administration's justifications for Project Match record transfers. The White House office, however, went to great pains to disassociate itself as much as possible from the whole business, saying its opinion was "not binding" on agencies participating in Project Match.

Under the Privacy Act, OMB noted, each agency decides how to implement the law. This is proper, OMB said, because each agency maintains different types of records for different purposes. OMB made no attempt, however, to reconcile that statement with the fact that two years earlier it had developed Privacy Act guidelines that applied to all federal agencies.

Regarding the routine use provision of the privacy law, OMB told Freyer, "While we believe that a routine use can, as appropriately drafted and promulgated, be a legal basis for the transfer of this information, we are not unmindful of the consequences of such a use or of the difficulties in arriving at our conclusion."

In five pages of rambling, largely theoretical discussion of law and computer matching, OMB concluded, "The requirement of compatible purpose in the routine use is difficult and is ultimately largely a matter of judgment."

OMB did concede, however, there was need for an "overall administration position on matching programs"

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and said it and the White House domestic policy staff would work to develop one.

White House Involvement

So now the White House was directly involved in what was fast becoming a hot civil liberties issue. To make matters worse for the Carter people, the administration was hard at work on the White House's much-ballyhooed "privacy initiative" — a project to develop administrative and legislative recommendations to

matching programs, promising a large Washington conference on waste, fraud and abuse in government programs that the administration would expand matching projects.

Califano's efforts to clean up government programs squared nicely with Carter's own self-perceived mandate to get the federal government in order. But the privacy initiative, with its charter to expand the protections of the 1974 law, was also

important to Carter, and the two projects, as Plesser told the White House, were now clearly at odds.

Despite the White House concern, Califano was still pushing hard for more and bigger computer matching projects. And Califano was hard to refuse. A consistent "winner" in private law practice before joining the Carter Cabinet, Califano had also been a close adviser to President Lyndon Johnson and was committed to making the Democrats' social pro-

grams work.

His commitment to having things his own way and his willingness to fight for what he wanted made Califano one of the more effective and controversial Cabinet officers in recent memory. Eventually the contention he consistently stirred up among Carter advisers resulted in his being fired in a mid-administration Cabinet purge.

But in early 1978, Califano's departure was still to come and for the in-

'Califano's efforts to clean up government programs squared nicely with Carter's own self-perceived mandate to get the federal government in order. But the privacy initiative, with its charter to expand the protections of the 1974 law, was also important to Carter, and the two projects were now clearly at odds.'

implement the suggestions of the 1977 final report of the Privacy Protection Study Commission (PPSC), the group set up to continue the work that led to the 1975 Privacy Act. There were already indications Project Match was severely compromising this White House privacy effort. Shortly after Project Match was announced in 1977, PPSC Chairman David Linowes, in an interview reported by the Associated Press, had called the match "an abuse of personal privacy." Califano was "terribly misinformed" about privacy, Linowes said, and he called computer-to-computer linkage "the biggest threat to privacy today."

Now, several months later, the White House was starting to come to grips with the implications of Project Match for the Carter privacy initiative. In February 1978, the White House Office of Telecommunications Policy (OTP) asked former PPSC General Counsel Ronald Plesser to comment on those implications.

In a reply memo, Plesser said the legal foundations for Project Match were "at best a broad reading of the compatible purposes test within the routine use provision" of the Privacy Act. "An approval of Project Match would negate any concerns that disclosure be consistent with the reasons for collecting the information or within the expectations of those supplying the information," Plesser said.

He noted there were several PPSC recommendations that would be "very difficult" for the White House to support and still approve Project Match and its successors.

With this kind of heat being generated from inside and outside the administration, the White House and the President himself were put in a bind. Carter had personally and publicly been stumping for Califano's



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mediate problems of Project Match and its progeny, Carter's advisers recommended the time-honored political tactic of insulating the President from controversy and keeping him from having to make decisions in a no-win situation.

A Feb. 10, 1978 memo to the White House domestic policy staff chief, Stuart E. Eizenstat, from staff assistant Richard Neustadt put the situation in perspective.

"Matching is a cheap, quick way to identify violators and save federal money," Neustadt said. "Joe Califano is strongly and publicly committed to the effort, as are some powerful people on [Capitol] Hill. . . . Califano feels that matching is key to showing we are serious about cutting down welfare fraud and that that is essential to passage of welfare reform."

Neustadt noted about matching, however, that "its propriety under the Privacy Act is unclear" and added that "there is considerable nervousness about matching among pro-privacy forces on the hill." He suggested those forces, represented by Rep. Freyer in the House and former Sen. Edmund Muskie (D-Maine) in the Senate, as well as others, "have avoided public comment because they are reluctant to attack a procedure that identifies federal employees who are cheating the government."

Referring to the problems matching posed for the White House privacy initiative, Neustadt said, "The matching programs are being initiated in the midst of the overall privacy study and tend to make it look irrelevant or as though the outcome has been predetermined."

The problem was compounded, he continued, by Califano's efforts to spread matching programs into other agencies and into the private sector.

Noting the immediate difficulty was with Project Match itself, because CSC and DOD "are looking to us for guidance on whether to give HEW their computer tapes," Neustadt recommended going ahead with that project but trying "to draw some lines" on additional ones. Neustadt informed Eizenstat he was setting up an Interagency task force to draft guidelines for matching projects that would get privacy safeguards for them.

Facing the Public

Having recommended the White House give its blessing to Project Match, Neustadt then turned to the problem of how to face the public with that decision. His suggestion: Play for time and keep a low profile. "HEW will not get the tapes until April," he pointed out, "and we will be able to change our minds until then."

Meanwhile, he said, the task force would get busy. "They will try to develop answers by mid-April, so we will be able to respond to the Hill or the press if necessary," Neustadt said. "Until then, we can say that the

approval of the matching program is tentative and that we are working on guidelines."

Soon after, the situation was brought to the attention of President Carter, who was informed of the growing controversy in a memo from then OMB Director James T. McIntyre Jr. "Because of the privacy concerns expressed, we have agreed to lead a small, quick (30-day) effort to develop an administration position on those programs and to devel-

op some guidelines for them," he told the President.

He informed Carter the privacy concerns included:

- "The use of personal information for different purposes than those for which the individuals were told the information was collected."
- "Indiscriminate extension of these matching programs into areas of greater personal privacy expectations, e.g., tax information or political activities."

McIntyre also noted congressional and private-sector opposition and continuing pressure from Califano to expand the matching programs. McIntyre's proposal, which Carter initiated, was to delay additional record transfers until after an administration position was formulated. To do otherwise, he noted, would challenge the objectivity of the policy development process and "appear inconsistent with the purposes of the study, i.e., whether and how these

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matching programs should take place."

Administration's Guidelines

During the ensuing months, the administration worked to develop matching guidelines. The early versions showed strong concern that the projects not be undertaken unless they could be shown to be the best enforcement mechanism available for government programs, unless they were demonstrably cost-effective and unless they had strong privacy controls.

By this time, then, the government was widely aware of the programs' sensitivity. This was further illustrated by a March 22, 1978 memo from OTP to various administration officials involved in the policymaking process. In the memo, OTP analyst Terri Steichen, who was heading the presidential privacy initiative, said the matches raised the same policy problems that doomed earlier plans for a national data bank: "It is only a matter of time," Steichen wrote, "before the public begins to perceive these matching programs as the beginning of a government data bank." Linking various, unrelated data bases, his reasoning went, is the

same as developing a large central computer file.

"The surface attractiveness of these programs has not been lost on the public, nor has it been lost on those who promote such systems. However, the public to date has only been exposed to one point of view on these programs. It would be short-sighted in the extreme to expect this benevolent supportive public attitude to prevail indefinitely," he warned the administration decision makers.

"Concerns about data banks cut across all political and philosophical boundaries," Steichen observed, referring to privacy-related statements from former Sen. Sam Ervin, Supreme Court Justice Louis Brandeis and even Alexander Solzhenitsyn to bolster his argument that "it is important in the preservation of a humanitarian political system to prevent the development of a national data bank."

How Effective?

Turning to the question of the effectiveness of matching programs — a subject being aired more and more as the numbers of people indicted through matches came to be seen as

disappointingly small compared with the massive effort needed to arrange and carry out the matches — Steichen suggested the ultimate result of the programs would be to mask, not uncover, government inefficiency.

"One effect of the 'matching' programs," he said, "is to shift public attention away from the public assistance programs themselves. Just as the magician uses a sleight of hand to confuse his audience, so agencies use matching programs to give the cosmetic appearance of tightening up their incredibly mismanaged programs. The problem is that in spite of the appearance, the programs and all their insufficient procedures continue unchecked."

Over the next several months, a number of matching guidelines drafts were produced, each one a little less restrictive than the first one proposed by Steichen. But it was August of that year, 1978, before a draft finally appeared in the *Federal Register* for public comment. And it was not until March 1979 — more than one year after the guidelines development process began — that the final guidelines were issued.

They would, OMB Director McIn-

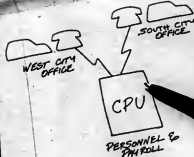
tyre assure the public, "balance the government's need to maintain the integrity of federal programs with the need to protect the individual's right to privacy." Matching should be used, the guidelines said, "only if the alternatives are less effective, more expensive or would present a greater threat to personal privacy."

No Clear Justification

The guidelines contain several pages devoted to how to manage the matching programs, how to keep OMB and Congress informed of the programs and how to ensure their cost-effectiveness and security. But while they seemed to weave a web of respectability and privacy consciousness around computer matching, the guidelines still did not come to grips with the lack of clear legal justification for personal records disclosures.

In fact, OMB pointed out, the guidelines were not meant to justify computer matching; they were prepared, the agency said, only to govern how the programs, if approved, would be conducted. They specifically state, therefore, that "compliance with these guidelines does not relieve a federal agency of the obligation to comply with the Privacy Act."

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When the routine use provision of the privacy law is used to justify the disclosures, the guidelines directed, a description of the new routine use must be published beforehand in the *Federal Register*. And, the guidelines said, "The notice should explain the justification of the routine use, including how the disclosure is compatible with the purpose for which the information was collected."

Since it was widely accepted that previous matches had been conducted for reasons scarcely related to or compatible with the purpose for which the matched records were originally compiled, it was difficult for privacy advocates to perceive how the guidelines really addressed the problem of matches being conducted with little apparent legal justification.

Even more confusing, the guidelines contained a section revising the 1975 OMB Privacy Act guidelines to provide an even stricter prohibition against disclosures.

"An agency is authorized to disclose a record (without the advance written consent of the individual to whom the information pertains)," the new provision read, "when it deems that disclosure to be appropri-

ate and consistent with the letter and intent of the Act..."

But after noting Congress would not have considered a use "routine" if it were for purposes other than originally intended during data gathering, the matching guidelines inexplicably direct that all disclo-

The intent of the guidelines, no doubt, was to forbid any computer matching program that could not be completely justified under the privacy law. The practical result of the guidelines, however, was in effect to authorize all manner of record disclosures for whatever reason might

The intent of the administration's guidelines, no doubt, was to forbid any computer matching program that could not be completely justified under the privacy law. The practical result of the guidelines, however, was in effect to authorize all manner of record disclosures for whatever reason might be conveniently labeled "routine uses" by any agency wanting to perform a matching operation.

ures for matching be made "pursuant to the routine use provision."

The guidelines, then, indicated that routine uses of records proposed for almost all matching programs would probably not be consistent with the legislative intent of the Privacy Act, but at the same time they said that very provision of the law should be used to justify the disclosures necessary for matching.

he conveniently labeled "routine uses" by any agency wanting to perform a matching operation.

For example, in July 1980, the Office of Personnel Management (OPM) proposed to release some of its records for a matching program to help the Veterans Administration check the accreditation of its hospital employees.

Following the guidelines, OPM

published its proposal saying the disclosure constituted a routine use of its data because the agency believed "that an integral part of the reason that these records are maintained is to protect the legitimate interests of the government and, therefore, such a disclosure is compatible with the purposes for maintaining these records."

Given that kind of broad justification, just about any disclosure of federal personal records could be imagined. All federal records could be said to be maintained for "the legitimate interests of the government."

So it should come as no surprise that numerous disclosures of agency records for computer matching programs were made following issuance of the guidelines. However, although matches continued, they did so at a more restrained pace than during the early, heady days of anything-goes matching of Joseph Califano.

In fact, although the guidelines document was not very strict, it did deter freewheeling matching. One person involved in the drafting process has attributed that effect more to the fact that bureaucracies tend to shy away from administrative road-

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blocks than to the strength of the directive. And in terms of everyday departmental management, the guidelines, with their requirements for prior public announcement, solicitation of comments and reports to Congress and OMB, do constitute a significant bureaucratic obstacle.

But enthusiasm for using sophisticated modern technology to police federal programs dies hard. Califano is gone from public service now, but the present secretary of the depart-

ment, now renamed the Department of Health and Human Services, is another strong advocate of the "catch them by computer" enforcement method.

One of the first acts of Richard S. Schweiker, Califano's present successor, was to push a plan for a national data base of government benefits recipients. Record centralization, he figured, would ease the task of keeping ineligible persons from benefiting from government largesse.

As might have been expected, his plan met with immediate and stiff resistance from privacy advocates in Congress and in the private sector, including the ACLU. But it seems some lessons are hard to learn; Schweiker is now said to be considering a scaled-down version of the same plan — one not likely to be any more palatable to civil libertarians.

And the new administration, as zealous as the last to curb fraud and waste in federal programs, is spon-

soring a major renaissance of computer matching. The Labor Department's McBride, who heads a White House task force on computer matching, said recently the technique should be used at all levels of government. To that end, he said, the administration will seek a relaxation of the OMB guidelines, which he said are far too restrictive.

As to privacy fears in general, McBride claimed the earlier privacy programs were controversial not because they actually violated the Privacy Act in any way, but because of a misdirected "pervasive feeling" they jeopardized personal privacy.

He promised that neither this caution about privacy nor any concern that the programs might cost more than they save the government in benefit payments will deter this administration as they did the last.

Computer matching, according to McBride, is an idea whose time has come. But given its history, it might more exactly be characterized as an idea whose time has come again.

By overestimating the soundness of the legal precedent it calls on for computer matching, the new administration may sentence itself to a replay of the long and sometimes bitter policy dispute that marked the Carter White House's experience with computer matching.

In the end, the Reagan administration may find itself as hard-pressed as the Carter administration was to justify its use of computer matching as a cure-all for the excesses of a large and intractable bureaucracy.

Jake Kirchner is a correspondent for Computerworld's Washington bureau.

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Module Links Chips, Swift

HOBOKEN, N.J. — A real-time software link between two financial networks has been announced by Arbat Systems, Inc.

The Integration Module reformats messages between New York's Clearing House Interbank Payment System (Chips) and the International Society for Worldwide Interbank Financial Telecommunication (Swift) networks. The module is said to reduce manual intervention to 20% of transmissions.

The Integration Module costs between \$75,000 and \$100,000 from the firm at Arbat Plaza, Hoboken, N.J. 07030.

Modem Comes With Battery

NAVY MUN, Calif. — A Bell 103-compatible modem with a battery power system capable of running 50 consecutive hours is available from Anchor Automation, Inc. The Signalman MK1 uses a built-in RS-232C cable to interface to any RS-232C port. Its size allows users to mount it directly onto computer enclosures or other tight places. A non-audible carrier detect circuit replaces LEDs to confirm standard telephone line connections.

The modem costs \$129 from Anchor, 16130 Valerio St., Van Nuys, Calif. 91406.

Port Expander Introduced

MOUNTAIN VIEW, Calif. — Kaufman Research Manufacturing, Inc.'s newly announced port expander is said to allow either four modems or four terminal clusters to share a single CPU port.

The Model 401 reportedly can switch inbound clock signals and data, as well as synchronize clear-to-send signals for outbound traffic.

The unit costs \$895 from the firm at 2260 Mora Drive, Mountain View, Calif. 94040.

Test Set Measures Bit Errors

CHELMSFORD, Mass. — A modular test set for bit error rate measurements up to 650MHz has been announced by Tauton, Inc.

The Berts-650 generates pseudorandom patterns of 2⁻¹, 2⁻¹, 2⁻¹ and 2⁻¹ for stimulating the system under test and measures the bit-by-bit errors on the patterns as they are received from the system under test.

Bit error rate or total errors can be measured on continuous data or on burst data. The unit costs \$26,900 from the firm at 27 Industrial Ave., Chelmsford, Mass. 01824.

Protocol Converter Lets Ascii Units Replace 3270s

WOODLAND HILLS, Calif. — Protocol Computers, Inc. (PCI) has unveiled a protocol converter that is said to take the place of the IBM 3276 and allows Ascii terminals to be substituted for IBM 3270 CRT terminals on Systems Network Architecture/Standard Data Link Control (SNA/SDLC) networks.

The PCI 1076 appears as a 3276 on the SNA line and, with up to seven ports, permits any combination of seven Ascii CRT terminals, printers and/or autoterminals for remote communications.

Ascii CRT terminals appear as full-screen 3276s to the host. Ascii printers appear as 3276s. No programming or changes to the host applications is required, the vendor explained.

Corporate users of SNA/SDLC communications networks have up until now been limited to using either IBM terminals or a limited number of brands with 3274/3276 interface options, the vendor claimed. With the PCI 1076, 32 different Ascii CRT terminals may be used at any one time on each 1076.

The operator can select from a menu of CRT terminals on every port of the 1076 and/or the "PaperCRT" option for keyboard printers, the vendor said.

The PaperCRT option provides full-screen editing on any hard-copy intercon-



The PCI 1076

active terminal. The option allows users in remote locations to access the complete library for order-entry and order-status review, sales information, programming, systems analysis and more, with portable Ascii units from any location with a telephone.

Using "dumb" Ascii terminals in the \$500 to \$600 price range in place of the 3276s saves as much as \$2,000/terminal initially, a spokesman said.

The PCI 1076 is available in one-, three-, five- and seven-port models for \$3,100, \$4,500, \$5,600 and \$7,000, respectively. There is an annual maintenance fee ranging between \$320 and \$680. The PaperCRT option costs \$450.

PCI is based at No. 107, 6430 Varier, Woodland Hills, Calif. 91367.

DEC, IBM Processors Tied Under BSC

NEW YORK — Advanced Systems Concepts, Inc. has unveiled software designed to provide intersystem communications between Digital Equipment Corp. and IBM computers using 3271 binary synchronous communications (BSC) protocol.

Interconnect (Icon) is a virtual terminal facility that is said to allow the DEC VT100 (or VT52) to perform as an IBM 3277 block mode terminal. The Icon user may "log on" to an IBM system and enter into an interactive dialogue. Though the user's terminal is physically connected to a local DEC computer, it will appear as though it was attached directly to the IBM system.

Field validation/protection, 3277 screen formatting and program func-

tion/access keys are fully supported, according to the vendor. Virtual terminal mode is completely turnkey. Icon also provides an interprogram communications mode that enables application programs running on a DEC system to "talk" to active IBM programs.

This makes feasible such applications as remote data base inquiry/update and remote resource sharing, the vendor noted. Icon runs on the DEC VAX and PDP-11 computers under the VMS and RSX-11M/Plus operating systems. No modifications to DEC operating systems are required by Icon. The Icon package for PDP-11 is costs \$9,000, while the VAX version costs \$10,500, the firm said from 1617 Kingsland Lane, Fort Lee, N.J. 07024.

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Datamedia Adds Five Terminals, Two Colorscans

PENNSAUKEN, N.J. — Datamedia Corp. has introduced five terminals and two additions to its Colorscan terminal family.

The 132-col Excel 22G

monochrome point-to-point graphics terminal is compatible with the VT-100 and "most" graphics software packages that utilize a Tektronix 4010 driver, ac-

ording to the firm. The 128 ASCII character set terminal costs \$2,995.

The Excel 3270-5 terminal is said to be compatible with IBM's 3275 terminal and 3276 stand-alone. List price is

\$2,295.

Colorscan 30 is a 132-col color terminal said to be compatible with the Applied Digital Data Systems, Inc. Regent 25, Hazeltine Corp. 1420, Lear Siegler, Inc. ADM 34 and Datamedia Elive 1521 monochrome terminals. Its price is \$3,195.

Colorscan 60 is an eight-color, 132-col buffered terminal said to be ANSI X3.64-compatible. Designed for use with Digital Equipment Corp. VT131 and VT132 smart terminals, it costs \$3,395.

Excel Models 42 and 44 are 60-col buffered terminals with a two-page display memory and a 12-in. CRT on the Model 42 and a 14-in. CRT on the Model 44. The Excel 42 costs \$995 and Excel 44 costs \$1,140.

The Excel 62/64 is a smart 80- or 132-col terminal with 24-line display, block mode transmission and split screen/regional scrolling. The ANSI-compatible terminals differ in their 12-in. or 14-in. displays and prices, which are \$1,895 for the 62 and \$2,040 for the 64.

The Excel 70 is a 132-col terminal compatible with Data General Corp.'s Daether 100, 200, 280C and DG 6052/6053 display products. The terminal costs \$1,395. Datamedia is at 7401 Central Highway, Pennsauken, N.J. 08109.

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Unit Uses DEC Modes

ANN ARBOR, Mich. — Ann Arbor Terminals, Inc. is offering a version of its Ambassador terminal said to implement several of the private-use modes of Digital Equipment Corp.'s VT100 unit.

The Ambassador 300 unit is intended for users who want DEC controls for existing software, but want Ambassador features such as 60-line full-screen display capability.

Added modes/controls include VT52/Ansi mode, origin mode and set top and bottom margins. While in VT52 mode, the unit operates as a VT52 terminal and responds only to the VT52 command set. While in Ansi mode, the terminal responds to the full Ambassador control set.

The Model 300 is available in two desktop models. E-Case costs \$1,595 and the more streamlined D-Case costs \$1,695 from the firm at 6175 Jackson Road, Ann Arbor, Mich. 48103.

Terminal Runs on DEC

SUNNYVALE, Calif. — A programmable CRT terminal said to be code-compatible with Digital Equipment Corp.'s VT100 and VT52 models has been developed by Direct, Inc.

The VP600/C complies with Ansi standard X3.64-1979 and comes with 16K bytes of display random-access memory, upgradeable to 32K bytes. Also included are a buffered printer port, buffered editing, block mode, forms mode and ability to download programs or sections of programs from the host to the terminal's memory. The unit costs \$1,850 from 1279 Lawrence Station Road, Sunnyvale, Calif. 94086.

CDI Offers RO Device

BURLINGTON, Mass. — Computer Devices, Inc. (CDI) has introduced a high-speed, lightweight, bidirectional plotting, receive-only (RO) data terminal which operates at 160 char./sec.

The Model 2100 features 80- or 132-col selectability, 1,200 bit/sec communications and a plot option with a maximum of 8,192 dot/in. Other features include a five by 10 dot matrix, full 128 Ascii character set with upper-case and lower-case characters with descenders and true underscore/overscore, the vendor said.

The terminal costs \$1,365. CDI said from 25 North Ave., Burlington, Mass. 01803.

Graphics Module Fits DEC LA120

BURLINGTON, Mass. — Texprint, Inc. is offering a plug-in module for Digital Equipment Corp. LA120 terminal printers that allows charts, diagrams, maps, formatted reports and other graphic data to be generated on the LA120.

Decplot provides a precision dot-addressable plotting feature over the entire page, while maintaining the speed of the conventional text printing mode of the LA120, the vendor said.

Decplot software conforms to the graphics protocol standards of DEC and is compatible with most DEC graphics terminal products, as well as with Texplot, the portable graphics terminal based upon Texas Instruments, Inc. Silent 700 equipment.

Decplot modules cost \$975 from Texprint, 8 Blanchard Road, Burlington, Mass. 01803.

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Our versatile CRT/printer workstation packages are available in TTY compatible models adaptable for use on a wide variety of systems or applications.

'Skitzo' Released

COLORADO SPRINGS, Colo. — United Ventures Co. has unveiled a device that appears to be a computer as two terminals, allowing applications programmers to edit program files on the main channel while monitoring a compile or load of a previous routine initiated on the auxiliary channel.

The Skitzo also allows a user to initiate an end-of-month accounting run on the auxiliary channel. The user could then post personnel information to the data base while monitoring the infrequent prompts and status messages. All this is accomplished without terminating either task to respond to the other.

Skitzo costs \$450 from United at 3103 Karen Place, Colorado Springs, Colo. 80907.

Satisfies Fault Analysis

Monitor Performs X.25 Analysis

HORSHAM, Pa. — A data line monitor for X.25 frame and packet-level analysis is available from Digilog, Inc.

The DLM IV performs quick fault analysis on dial and packet-switched lines. It includes X.25 High-Level Data Link Control and X.25 Binary Synchronous Communications to Level 3, a spokesman said. In addition, menu parameters and output

buffers can be "saved" during power down by nonvolatile erasable programmable read-only memory. Other features are a 1,024-char. output buffer, counters and timers and bit protocol orientation.

The product is applicable to several different environments with its nine standard and one optional codes. External video connectors, printer output for both clear

text and hex and mass storage interfaces are also standard.

The monitor costs \$4,695 from Digilog at its Network Control Division, Babylon Road, Horsham, Pa. 19044.

Workstations Introduced For Ethernet

LAS VEGAS — Three Rivers Computer Corp. has introduced multiprocess distributed interactive workstations compatible with the Ethernet local-area network.

The Perq single-user workstations permit processor-to-processor communications or processor to intelligent peripheral device communications at rates up to 10M bit/sec over a single coaxial cable.

Using Ethernet, one Perq workstation may utilize resources of other Perqs linked in the same system. For example, a large file system interconnected to a Perq workstation may be shared by all other Perq workstations on the Ethernet network.

Up to 1,024 of the devices may be attached to an Ethernet network, which may span 2,500 meters.

The Ethernet-compatible workstation costs \$3,600 from the firm at 720 Gross St., Pittsburgh, Pa. 15224.

Rixon Multiplexer Offers Speeds To 9,600 Bit/Sec

SILVER SPRING, Md. — Rixon, Inc. has unveiled a statistical multiplexer that is said to provide error-free transmission of up to eight asynchronous data channels over a single composite link.

The DCX815 provides an unrestricted mix of speeds from 50 to 9,600 bit/sec and any five, six, seven, or eight-bit Baudot, ASCII or IBM code. With a maximum aggregate input of 19.2K bit/sec, speeds and codes are switch-selectable on a per-channel basis or automatic bus rate.

A single-digit readout provides a continuous monitor of the composite link utilization to aid in network management. Easy-to-use diagnostics permit the user to rapidly identify a defective channel while maintaining service on the remaining channels, the vendor said.

The four-channel version costs \$1,700 and the eight-channel version \$2,500 from Rixon, 2120 Industrial Pkwy., Silver Spring, Md.

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DP Manager Tommy Ross discusses a printout with programmer/analyst Regina Smith as operator/programmer Naria Novis changes a tape.

There's Rejoicing in Temple Since 'Fred' Joined the Flock

Special to CW

TEMPLE, Texas — Like virtually every community in the U. S., the city of Temple has its problems with rising municipal costs. However, last year it saved about \$25,000 on its annual audit and as of October had managed to cut \$120,000 in annual personnel costs.

City officials here give most of the credit for the cost savings to "Fred," the pet name given to Temple's on-line computer system. The system not only manages the city's administration, but provides up-to-the-minute financial reports that are used to trim the city's budget. In fact, since the computer-based system was installed it has cut costs in most city departments and is expected to more than pay for itself by next year, Barney L. Knight, Temple's city manager, claimed.

(Continued on Page 60)

As Well as Quadrupled Memory

Univac Adds Multiprocessors to 1100/60

ST. PAUL, Minn. — Sperry Univac recently expanded its 1100/60 line of large-scale processors by adding four multiprocessor computers, one of which offers double the performance of the firm's previous top-of-the-line dual-processor system.

At the same time, Univac unveiled a separately housed memory unit that quadruples the 1100/60's memory capacity to 32M bytes.

The newly introduced 1100/63 H1 and H2 incorporate three processors while the 1100/64 H1 and H2 incorporate four — all contained within the same cabinet. All have a cache memory of up to 32K bytes.

The new systems, billed as "another growth option" for 1100 users, mark the first time that Univac has used more than two processors in its 1100/60 systems design. The expanded processing architecture brings the 1100/60 computers into the same performance range as IBM's 3033 processors. Previously, the firm's 1100/80 systems — and their use of one to four processors per system —

were the only ones that competed at that level and with the bigger IBM systems, a spokesman said.

Like previous 1100 systems, the newer arrivals are basically similar except that the H2 models have an extended instruction set that reportedly boosts system performance from about 25% to 50%. The extended instruction set consists of 20 extra hardware-based instructions that are said to allow the processing of Cobol and data base business applications more efficient.

The systems also have up to 14 channels, two of which are byte channels that can handle eight sub-channels, he stated.

Also, as in the firm's other multiprocessor computers, the 1100/63 and 64 function under the same operating system. They can also use APL, Algol, Basic, Cobol, Fortran, PL/I, RPG and the Pascal programming languages.

With the new systems, the 1100/60 computer line now contains six single-processor systems and eight multiprocessor computers.

Announced at the same time as the systems, Univac's Main Storage Unit (MSU) complements the 1100/60 systems and expands the line's maximum storage capacity from 4M bytes on a single-processor configuration and 8M bytes on a dual-processor system to 32M bytes of memory.

Add-On MSU

Previously, the MSU was integrated into the processor cabinet. Univac will continue to manufacture the 1100/60 computers with the internal MSU, as well as an external add-on, "because a lot of people have space limitations and various other things and want the integrated memory," John E. Irwin, Univac's product manager for the 1100/60 line, explained.

"People who feel they're going to have growth requirements... it's probably better that they start out with the new MSU," Irwin said. "That way they don't have to swap out their old memory later."

The MSU is available in memory capacities ranging from 4M to 32M bytes and can be used

with all 1100/60s. Univac's 1100 Model C systems, however, can handle only one cabinet, with a maximum of 16M bytes of memory, while Models E and H systems can accommodate two MSU units and the full memory limit.

Existing 1100/60 systems can be field upgraded to include the stand-alone MSU.

The three-processor 1100/63 H1 and H2 systems cost \$2,397,879 and \$2,513,625 and lease for \$52,182/mo and \$54,715/mo, respectively. The four-processor 1100/64 H1 and H2 systems cost \$3,095,504 and \$3,249,832; monthly lease prices are \$67,376 and \$70,755, respectively. Lease costs include systems maintenance, the spokesman noted.

The MSUs are priced at \$100,000 for 4M bytes of storage. The monthly lease cost for the same amount of memory is \$2,120, including maintenance.

The processors and memory expansion unit will be available in the fourth quarter of 1982, the spokesman said. Univac can be reached through P.O. Box 500, Blue Bell, Pa. 19422.

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Temple Sings Praises of Cost-Cutting System

(Continued from Page 59)

"Before the computer, we hadn't even advanced to the green eyeshade level," Knight said. Now "we're convinced there's not a better local government financial system in the United States than this one."

Temple's Local Government Administration System (Logas) consists of a Univac 90/40 processor with 774K bytes of memory and 515M bytes of disk storage. The system also has 21 Univac UTS terminals, located in various offices of the city's government.

The system's software, written by Univac, includes modules for accounts receivable, accounts payable, journal file maintenance, payroll, general ledger and a number of other

municipally aimed management packages. The computer's operating system is Univac's OS/3.

User Oriented

Logas is a user-oriented system. Terminals are located in finance, utilities, tax, the city manager's office, the director of municipal services, the city's inspection department and even at the home of the data processing manager. In addition, the system was built to shadow the city's old manual system as closely as possible.

However, because it is an on-line system, the computer incorporates certain built-in safeguards. One of these safeguards is batch posting. For example, when data is input it is initially

posted to a "hold" file. Thus, if an operator makes a data entry error there are two changes to correct before the system will update a file: a review at time of key-in and a report produced at the end of the day. The latter change allows the systems managers to check records that involve changes before actual updating takes place, Jorge A. Cruz-Aedo, Temple's director of finance, explained.

"As a result, I can get accountant-level work from my clerks," he said. "And they can handle virtually double the load they could in the past."

Criscrossed by two railroads and two major highways, and presently host to some 100 small to large industries, Temple has no appreciable unemployment. So, keeping the books

balanced and producing fast and accurate financial statements are important to the city's continued growth.

Soon after the city decided to go into data processing, officials set up a "want list" of financial needs to keep up with the city's rapid growth. This list included:

- The elimination of as many steps as possible in accounting procedures.
- The ability to immediately provide updated, accurate information.
- The ability to provide both current and historical information involving any of the city's funds or expenditures.

To comply with the pronouncements of the "National Council on Governmental Accounting" as published by the Municipal Finance Officers' Association.

- To act as an accrual system that would show the status of funds in every account in the city's budget.
- To provide a reliable audit trail for all transactions, including expenditures and revenues.

The city's computer staff managed to meet all these criteria within six months, "working about 24 hours a day except for one day that went 40 hours," according to Knight.

So far, the computer system has only been down once since its first year of operation.

Despite the number of terminals hooked onto the system, response time is generally only about two seconds, he continued. The 90/40 processor has reportedly run six jobs at once plus the on-line network.

Members of the city's three-person programming staff are on duty during the day with the operator/programmer on until 10 p.m. But the system is up around the clock, so the terminals can be used at any time.

Printers linked to the terminals are used to print tax statements and certificates, police reports, purchase orders and finance receipts and checks.

"This year, I did all four budgets at my office terminal in less than a day," Knight pointed out. "I could go back and make a change, and everything it affected was adjusted instantaneously and automatically in about 20 places by the computer."

The new 14" screen

It's tough to read the screen of a terminal with a bulky and expensive keyboard. Now you can clip children's and adults' names to a green or white screen.

So if you want a big screen, it's a must.



VISUAL 100 - CDS VT 100" Color graphics Plot

- Non-glare, double screen
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NETS V7.0

POP 11/70 (Analog)

128KB Core D211-4C

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NETS V7.2

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Mercator Series 5000

Mercator Systems Offer Multiprocessor Design

SUNNYVALE, Calif. — A series of business computer systems that incorporate a multiprocessor design and can handle up to 16 simultaneous users has been unveiled by Mercator Business Systems, Inc.

The Series 5000 is an outgrowth of the firm's Series 3000 and 4000 computers, but offers larger memory and disk storage capacities. The systems' architecture is based on a multiple processor design that uses two 16-bit microprocessors to provide a greater ability to handle concurrent work loads, a spokesman said.

In its basic configurations, the MBS5000 is provided with eight serial ports and one parallel port, 128K bytes of random-access memory, 80M bytes of Winchester disk storage and a 12M-byte cartridge tape drive for transaction logging, backup and program load. The system

can be expanded to 16 serial ports in one eight-port increment, the spokesman added. Hard-disk storage and memory is expandable to 169M- and 128M bytes, respectively. In addition, both the disk and memory employ error-correcting techniques aimed at data integrity.

Software for the Series 5000 includes Mercator's Business Basic operating system, that can run programs written for MAI/Basic Four Corp.'s Business Basic Level III, and a variety of business-oriented applications programs.

The cost of a single-display system, with 128K bytes of memory, an 80M-byte disk drive, a 12M-byte tape drive and a 160 char./sec matrix printer, is about \$33,000.

Mercator is located at 1294 Lawrence Station Road, Sunnyvale, Calif. 94086.

For DP, WP, Graphics

Victor Introduces Desktop Micro

NEW YORK — A desktop microcomputer capable of data processing, word processing and graphics that is claimed to have more power and storage capabilities than any other microcomputer on the market has been introduced by Victor Business Products, Inc. recently.

Aimed at small- and medium-size businesses, the Victor 9000 business computer is based on a 16-bit Intel Corp. 8088 microprocessor. It has standard internal memory of 128K bytes, expandable to 256K- and 512K bytes.

The 9000 incorporates two 5¼-in. single-sided floppy diskettes, with a capacity of 1.2M bytes, which the company said is more than any other system in its price class. The Victor 9000 sells for \$4,995.

Standard features include a detachable typewriter-size keyboard with program function keys and a 10-key numeric pad. The CRT can tilt and swivel for ergonomic preference and has a dual-format screen that can display 80 char. on each line by 25 lines or an expanded format, which can display 132 char. on each line by 50 lines, Victor said.

In addition, the screen simultaneously displays high-resolution

tion graphics, which can address 800 dots horizontally by 400 dots vertically.

Two RS-232C communications ports and a codec voice level prompter are also included with the 9000, Victor said. Local network capabilities were hinted at by the company for some time in 1982.

The microcomputer will operate with either the CP/M or MS/DOS operating systems, which also are standard with the machine. Six programming

(Continued on Page 62)

Digilog Desktop Unit Hosts, Supports Multistation Nets

MONTGOMERYVILLE, Pa. — Digilog Business Systems, Inc. has introduced a desktop system designed to host and support a multistation network of systems, including the firm's Model 900 intelligent terminal. The System 1800 has 64K bytes of random-access memory (RAM) and can handle up to 16 workstations. The system also has a controller that utilizes a separate 280A microprocessor with 64K bytes of RAM and provides network-control functions and control of the system's Winchester-based mass storage.

The mass storage is configured in either 5M- or 10M bytes and includes an 820K-byte floppy diskette for backup, a spokesman said.

Communications outside the

Business System Uses Three MPUs to Handle Different Functions



Arc Automation Arcmicro

BRYAN, TEXAS — A microcomputer-based small business computer that uses three processors to control specific hardware and software functions has been introduced by Arc Automation Group, Inc.

Each of the three 280 microprocessors in the Arcmicro works independently of but in conjunction with the other two in sharing the system work load, an Arc spokesman said.

The first CPU, a system processor, controls all system and applications software functions. The second, a disk processor, controls disk operations including I/O transfer independent of the system processor. The third processor controls all CRT terminals, printers and communications links with the system processor, freeing it from interrupts and increasing communications throughput, the spokesman explained.

The Arcmicro can support up to four CRT terminals and two printers and has a memory that is expandable from 64K to 256K bytes.

The system relies on a memory management technique that permits multiple tasks to be performed at the same time. When running under Digital Research, Inc.'s MP/M II operating system, available as an option, the memory management scheme creates a multitier environment without physically swapping user programs, the spokesman noted.

Because each user program remains in memory, there is reportedly no overhead in transferring programs to and from disk. The system is also available with Digital Research's CP/M 2.2 operating system.

The Arcmicro supports up to two mini-Winchester disks, offering a total of 20M bytes of formatted storage and four double-sided, double-density diskettes with a total of 3.2M bytes of storage.

Self-Diagnostic Option

In addition, the system features a read-only memory-based self-diagnostics capability that tests memory and peripherals each time the machine is switched on. Part of this capability is an error detection routine that pinpoints such things as disk hardware failures by analyzing "soft" errors on the disk drives.

Options for the three-processor system include 2,400 bit/sec internal synchronous and external asynchronous modems.

The Arcmicro is available separately or in packages, called Arcmicro/Pac, that include a Digital Equipment Corp. VT-101 CRT terminal, DEC's 66 char./sec LA-34 printer and either CP/M 2.2 or MP/M II.

The entry-level Model 1 system, which includes 64K bytes of memory and two 800K-byte floppy diskettes, costs \$4,100. The Model 3 system, with the same memory, a 10M-byte Winchester disk and a single floppy is priced at \$7,300. The packaged Arcmicros range from single-user Pac 1 for \$7,350 to the multitier Pac 3 that sells for \$10,950. The Arc Automation Group can be reached at P.O. Box 1009, Bryan, Texas 77805.

Z80-Based Desktop Features Local-Network Architecture

SAN DIEGO — Micro Business Applications has announced an Intel Corp. Z80B-based desktop computer system said to employ features of local-network/distributed processing

Desktop Uses 8-In. Floppies, 64K-Byte RAM

SANTA CRUZ, Calif. — Alapa Computer, Inc. has introduced a desktop system, the ACI-2, which features two slim-line 8-in. floppy disk drives and 64K bytes of usable random-access memory (RAM).

The Z-80A microprocessor-based system will run Digital Research Inc.'s CP/M 2.2 software and can interface all industry-standard terminals, modems and printers using three RS-232 serial ports, the vendor said.

In addition to being used as a stand-alone system, the ACI-2 can operate as a smart time-sharing terminal, the vendor said.

The price of the system is \$2,995 from the vendor at 300 Harvey W. Blvd., Santa Cruz, Calif. 95060.

Q-Bus Repeater Out for LSI-11s

HUNTINGTON BEACH, Calif. — A Q-Bus repeater for Digital Equipment Corp.'s LSI-11 microcomputers has been introduced by Ranyan, Inc. The BMA-1 bus manipulator permits LSI-11 users to interface additional devices to the Q-Bus of their systems by providing an external interface to the LSI-11 backplane.

The repeater consists of two dual-height printed circuit boards connected by a 50-pin ribbon cable. One board resides in the Q-Bus backplane and the other in the BMA-1 extension chassis, the vendor noted.

As many as 20 additional unit loads can be interfaced to the device. Any device may be attached to the Q-Bus via the repeater, including additional main memory, terminals, printers or other peripheral devices. The BMA-1 repeater is priced at \$990 and is available immediately. The vendor can be reached at P.O. Box 790, Huntington Beach, Calif. 92648.

architecture.

The Micron 400 series supports up to three terminals in a single system.

The system design is said to provide each terminal with its own CPU and random-access memory, linked through an Intel Corp. Multibus.

A Micron 440 with 64K bytes of memory, intelligent disk controller, one dual-sided/double-density 5 1/4-in. floppy disk with up to 1M byte of, unformatted storage, one 12M-byte Winchester fixed-disk drive, CRT and four-module accounting software package, costs \$14,500.

Micro Business Applications is located at 11568 Sorrento Valley Road, San Diego, Calif. 92121.

Business System Boasts 16M Bytes of On-Line Storage

MILPITAS, Calif. — A multiuser, tabletop business computer that features up to 16M bytes of on-line Winchester hard-disk storage and 400K bytes of random-access memory has been introduced by Dynabyte, Inc.

The Model 5505 incorporates a Winchester disk with a storage capacity ranging from 6M bytes to 16M bytes. The system also has a floppy disk drive that provides additional storage up to 1M bytes, the vendor said.

The system's architecture incorporates the S-100 bus structure and includes RS-232C serial I/O ports. It operates under Digital Re-

search, Inc.'s CP/M, MP/M or the Oasis operating systems.

Software includes Dynabyte's Business Manager, an integrated accounting package; Micropro International's Wordstar word processing package; and Dynabyte's Business Planner, a financial modeling package.

The 5505-A1, with 6M bytes of hard-disk storage, is priced at \$6,995, while the 10M-byte 5505-B1 sells for \$7,495, according to the vendor.

The 16M-byte system sells for \$8,495, a spokesman said from the firm at 521 Cottonwood Drive, Milpitas, Calif. 95035.

We've got the VT100 market seeing red,



Introducing the VT100-code compatible Coloscan 10 for just \$3,195. It's the first affordable display terminal with the dramatic high-resolution color that businesses need.

The new Coloscan 10 features eight independently selected foreground/background colors (red, green, blue, yellow, cyan, magenta, black and white) crisply displayed in both 80- and 132-column formats. You also get a 128-character set, plus 128 special graphic symbols.

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Inside, the Coloscan is packed with performance. Like smooth or jump scrolling and split screen/regional scroll. Double high/wide and double-wide characters. Key-

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If your business needs more effective financial and sales graphs, charts, histograms, or drawings in 80- or 132-column formats, ask about the Coloscan 10.

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CROSS SOFTWARE PACKAGES

8086 Cross compiler for the 8086. All features of the standard C language, including floating point, are supported. Optionally, memory can be allocated for use with the 8086 Coprocessor assembly language. The compiler is suitable for use in porting UNIX to the 8086.

8087 Cross assembler for the 8087 coprocessor. Assembler for the 8086. Assembler input is an extension to the syntax of 8086. Listed below is a list of standard test programs.

8088 Cross assembler for the 8088. Capabilities include display, interrupts, interrupt service routine, as well as many others.

Host Systems: PC-XT running RT-11, DOS-1.1M, UNIX V8, LUNEXTV or VAX-11 running VMS, UNIVAX/32V, or any other system.

For information, contact:



Digital Products, Inc.

1201 27th Ave. S. Suite 222, Minneapolis, MN 55422

Phone (612) 865-7200

8086/8087/8088 Cross compiler, assembler, and linker are trademarks of Digital Equipment Corporation. RT-11, DOS-1.1M, UNIX V8, LUNEXTV, and VAX-11 are trademarks of Digital Equipment Corporation.

VT100 is a registered trademark of Digital Equipment Corporation.

DG Dot Matrix Printer Fits MPT/100, 80

WESTBORO, Mass. — Data General Corp. has introduced a microprocessor-controlled dot matrix printer for its MPT/100 technical desktop computer and MPT/80 series intelligent workstations.

The Model 4422 printer operates bidirectionally at 150 char./sec, has a full print-line input buffer and a 5-in./sec paper slew rate. It supports RS-232C serial communications and interfaces directly with DG's desktop computer or intelligent workstation.

The unit's 9-pin print head is capable of producing output using the full 96 upper-

case and lowercase Ascii character set, with true risers, underlining and boldface text for emphasis. The user can select either 80- or full 136-char. line lengths, a spokesman said.

The 4422 printer has a specially designed nylon ribbon cartridge, with a life expectancy of three million characters. In addition, the unit has an adjustable print head-to-plate mechanism that allows using up to 6-ply print forms.

The printer costs \$2,290 from the firm at 4400 Computer Drive, Westboro, Mass. 01580.

Impact Printer Features WP, DP, Graphics Modes

FORT WORTH, Texas — Radio Shack has introduced a high-density, dot matrix impact printer for its TRS-80 Model I/III, Model II and Color computers that features word processing, data processing and graphics modes.

The LP-VIII line printer is designed for draft and report printing, correspondence and most computer graphics

hard-copy applications. The printer operates at 40- to 100 char./sec, or 23 full 80-col line/min. It also has a print density of 4.35 to 22.2 char./in and a graphics density of 4,320 dot/sq in.

The unit has a nine-wire print head that permits a variety of modes and provides a range of character styles. For example, the printer has 96 uppercase and lowercase English letters and symbols, 32 international symbols and 30 block graphics characters, a spokesman said.

In its word processing mode, the printer offers near letter-quality proportionally spaced characters and can be used with a variety of word processing applications programs. It features full or half-space forward, underlining and superscript and subscript capabilities.

The printer permits selection of either a serial or parallel interface and offers a fixed pin feed for standard fanfold paper, plus friction feed for single-sheet or roll paper.

The LP-VIII costs \$799. Additional information can be obtained from Radio Shack at 1800 One Tandy Center, Fort Worth, Texas 76102.

System/34 Users Get Course For Operators

WOODLAND HILLS, Calif. — Automated Training Systems, Inc. is offering a new audio-visual interactive course for IBM System/34 workstation operators.

The emphasis in the course is on both the real-world environment and operator productivity.

Materials for the course include cassettes, an illustrated study guide, a workbook with tests and a diskette with exercises.

Operators will need about eight hours to complete the course, the vendor said.

Single copies of the course are priced at \$195, with discounts provided for additional units.

The vendor is located at Suite 107, 21250 Califa St., Woodland Hills, Calif. 91367.

Drive Fits Apple

CHATSWORTH, Calif. — Corona Data Systems, Inc. has announced the Starfire 5, a Winchester-type disk drive for Apple Computer Corp. Apple II processors.

The unit features a 5M-byte capacity and double-volume DOS files, the vendor said.

The unit costs \$2,995, the vendor said from 21541 Nordhoff St., Unit B, Chatsworth, Calif. 91311.

Verbatim

Verbatim.

Because I want to deliver information, not excuses.



In Stand-Alone WP Category

Users Rate Omega, Micom 2000/2001 Tops

By Ann Dooley
Special to CW

DELRAN, N.J. — Compucorp, Inc.'s Omega and Philips Information Systems, Inc.'s Micom 2000/2001 were selected as the top stand-alone word processing systems by a group of users who also nominated 17 other systems to Datapro Research Corp.'s 1981 Honor Roll of Word Processing Systems. Ranked first in the category of multiterminal WP systems was NBI, Inc.'s Ochs 8, followed by the A.B. Dick Co. Magna SL in the No. 2 spot and Wang Laboratories, Inc.'s OIS 130A at No. 3.

Trailing close behind Compucorp and Philips in the stand-alone systems category was the Lexitron Corp.'s 1202/1303, the NBI 3000 and the Adler Royal Business Machines' SE2000.

Three vendors gained more than one mention on the honor roll: IBM with five products and NBI and Xerox Corp. with two each.

The honor roll results were based on responses from 3,339 users of WP systems from across the country. Datapro's survey elicited responses on 47 models made by 22 different vendors of stand-alone systems and 23 models made by from 14 vendors of multiterminal systems.

To earn a place on the honor roll, a system had to be rated by at least 15 users.

Northern Telecom Unbundles Systems

MINNEAPOLIS — Northern Telecom, Inc. is now marketing the software for its distributed data processing line of equipment as separate "unbundled" packages. The option will apply to the Electronic Office Systems Group's distributed data processing equipment models 405, 435, 503 and 555.

The unbundled software packages will be available on diskettes and cartridge tape. The option will include individual packages for the operating system, utilities, communications and languages (TAL 2000, Cobol Version 2 and Cobol/2) used by DDP equipment customers. A master set contains all the individual modules.

The software may be licensed on a one-time fee basis and the user will pay a monthly support charge for each package ordered. Purchase prices on the software range from \$160 to \$690. Northern Telecom said from Metrocenter, 259 Cumberland Bend, Nashville, Tenn. 37226.

Model	Number Of User Ratings	Overall Satisfaction Rating*
Stand-Alone Systems		
Compucorp Omega	20	3.6
Philips Micom 2000/2001	91	3.6
Lexitron 1202/1303	102	3.5
NBI 3000	120	3.5
Adler SE2000	15	3.5
CPI 8000/8100	171	3.4
Lexitron L75 (No Problem)	179	3.4
Dictaphone Dual Display	32	3.3
IBM OGS/450	148	3.3
IBM Displaywriter	77	3.2
IBM OGS-440	75	3.2
Xerox 840	121	3.2
DEC WS78	41	3.2
IBM OGS-430	96	3.2
Xerox 850	116	3.2
Multiterminal Systems		
NBI Ochs 8	33	3.6
A.B. Dick Magna SL	65	3.5
Wang OIS 130A	53	3.2

*Weighted average based on a scale of 4.0 for excellent, where products received the same Overall Satisfaction rating and lowest scores, they are listed in alphabetical order.

The 1981 Datapro Honor Roll Of Word Processing Systems

earn an overall satisfaction rating of at least 3.2 on a scale of 4 and not be rated lower than 2.7 in any other category of the survey.

Major Advantage

WP users indicated that increased productivity was the major advantage to their

Trident Updates HP 3000 Package

LOS ANGELES — Trident Data Systems, Inc. has introduced a new release of Lastword, its word processing system for the Hewlett-Packard Co. HP 3000 computer system.

Among the new features, variable fields may be set aside in a document to be acted upon at a later time, proportional spacing and enhanced printing functions are available and a converter is included to transfer data between Editor and Lastword files.

The user license fee is \$4,900. An introductory demonstration kit is available at \$40 for one month from the firm at Suite 200, 8929 S. Sepulveda Blvd., Los Angeles, Calif. 90045.

systems. Among stand-alone users, 59% ranked this aspect first and 65% of the multiterminal users did so. Other advantages mentioned by both groups of users were the systems fulfilling their needs, upgradability, "excellent" human engineering and low systems costs.

The major disadvantages cited by the stand-alone group was that systems were hard for operators to learn (13%), and among multiterminal users the greatest problem was that the systems proposed by the vendors did not fulfill their needs (11%).

Other problems mentioned included poor human engineering, difficulty of keeping up with vendor enhancements and systems' costs exceeding the expected total. Since increased productivity topped users' lists and high costs were at the bottom, Datapro noted that users appear to be achieving sufficient cost savings to offset systems expense.

The majority of WP users are working in centralized WP centers, according to the survey results, with the next largest group appearing in a mix of centralized and distributed sites. Smaller percentages of users are working in work groups and wholly distributed environments, according to the survey. Users appeared to be coming from predominantly manufacturing industries, followed by government sites, insurance companies, banking, education, legal, engineering/scientific, chemical/petroleum, utilities and service bureau installations.

Users appeared to prefer purchasing their systems rather than renting, vendor leasing or third-party leasing them. Ap. (Continued on Page 68)

Olivetti Unveils Daisy Wheel Units

TARRYTOWN, N.Y. — Two daisy wheel printers with an automated paper insertion capability are available from Olivetti OPE.

The DY 211/ASF is a 20 char./sec. unit. Like the 34 char./sec. DY 311/ASF, it offers bidirectional printing and a fully motorized feeding mechanism, which loads up to 200 sheets and automatically reverses and reverses stacking. Both units also come with an RS-232C serial interface.

The DY 211/ASF costs \$2,350 and the DY 311/ASF costs \$2,870. Olivetti said from 505 White Plains Road, Tarrytown, N.Y. 10591.

Westinghouse Sure About Electronic Mail

PITTSBURGH, Pa. — A series of communicating word processors is saving time and money, while improving customer service for Westinghouse Electric Corp.'s Apparatus Divisions.

Through this electronic mail system, fully formatted documents containing all the special word processing characteristics of the original material, including pagination, subscript and edit controls, can be transferred between offices during the day or overnight. As an addition-

al benefit, the word processors also act as data processing terminals.

Westinghouse has integrated word processing units, a distributed processing system and a mainframe computer into a unique electronic document transmission (EDT) system.

"As part of its corporate philosophy and as a means of continually improving customer service, Westinghouse is dedicated to the goal of automating the office environment. This new system is

a significant step in that direction," according to Jerre Sumter, manager of field systems for the Marketing Support Division of Westinghouse.

"We're getting immediate savings now, but the excitement is in what we will be able to do in the near future. The implications for the marriage of data and word processing are enormous," he added.

The Marketing Support Division is the interface between the sales force —

whose products range from push buttons to turbines and nuclear reactors — and the manufacturing facility. To support sales efforts, the division transmits a variety of communications including the preparation and delivery of major proposals and contracts.

Eleven of Westinghouse's 106 marketing support field offices are now connected to the EDT system, which consists of Lexitron, Inc. word processors. Raytheon Data (Continued on Page 66)

OFFICE AUTOMATION

Westinghouse Saves With Electronic Mail

(Continued from Page 65)
Systems Co. PPS/1200 distributed processing systems; and a Control Data Corp. Cyber 1000 mainframe.

"We expect to have 28 offices connected to the system by the end of this year and the 46 offices that produce 86% of the orders on the system by late 1982," Sumter noted.

"We prepare about 17,000 pages of documents a month, half of which have to be sent to particular field sales offices at a cost to us of about \$2,000 in postage. EDT should take care of 8,500 of those pages and half the costs," Sumter said.

"In addition, EDT will eliminate the need for premium rate overnight delivery services when transferring original materials to meet customer

deadlines. It will also cut down the number of people and amount of time spent handling reports. Documents start off in the proper internal reporting format and need not be retyped at increasing management levels," he said.

System Requirements

"We wanted a system that offered store-and-forward unattended operation during off-shift hours to make maximum use of our dedicated line and the more readily available computer time. In addition, we required high transmission speed and the capability of translating all control characters designating special functions since we can't afford to send incomplete reports. All parts of a pro-

posal or contract are important, including subscripts and underlines," Sumter reported.

"We already had a teletype message system through the Raytheon PPS/1200 data processing system — now we wanted office-to-office transfer of complete word processing documents," he said.

Westinghouse looked for a word processing system that could interface with that distributed processor (which, in turn, was connected to the Cyber 1000 mainframe at the Pittsburgh computer center).

In this electronic document transmission system (EDT), a menu-driven software package allows an exchange of information between the Lexitron floppy diskette unit and the

Raytheon high-capacity disk system files. The Lexitron VT 1303 is used as the only input device in this arrangement. This process can take place throughout the day as documents are completed and sent to the PPS/1200 system files.

From the Raytheon files, documents are then transmitted to the Cyber for delivery to one or more (up to 10) similarly equipped Lexitron-Raytheon office systems, a step usually programmed later in the day — 8 p.m. at the Chicago office for example. If immediate transfer of documents is required, as in the case of an on-the-spot sale, the system can accommodate this requirement. "But it does interrupt normal DP functions," Sumter added.

In the case of service interruptions anywhere along the line, documents are stored at all levels — floppy diskette in the Lexitron, system files in the PPS/1200 and system files in the Cyber. Unattended operation is possible, with messages transferred from one office to the PPS/1200 of another. When the operator comes on duty, he need only check the hard disks to see if messages were transmitted overnight.

Switchover to the EDT function requires preparation with an emulator program (on floppy diskette). Once the program is accepted, a blank diskette is inserted and the documents can be reconstructed. While this program is specially designed for the Cyber 1000, Raytheon-Lexitron personnel are now working on systems for other mainframe computers.

The actual physical connection between the Lexitron VT 1303 and PPS/1200 requires the addition of only two printed-circuit boards to the 1200, one board and proper protocol diskette to the VT 1303 and appropriate cabling between the two units. Installation can be done completely at the customer site and interruptions of normal data and word processing applications are minimal.

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Omega, Micom 2000/2001 Rated Tops by WP Users

(Continued from Page 67)

proximately half of both the multiterminal and stand-alone users indicated they bought their systems outright, thereby displaying confidence in their systems choice and future usage, Datapro remarked. Few users (12%) indicated they used an outside consultant when making their systems plans, the survey showed, but Datapro noted that some remarked they later wished they had done so.

Users considered the processing of long documents their most important application, with 72% of the respondents naming this as No. 1. Other important applications in order of

ranking were the processing of repetitive letters, statistical/technical typing, memos/correspondence, short reports, text assembly, mailing lists, list processing, forms fill-in, math, electronic mail and graphics.

Enhancements Seen Trend

Datapro also asked users to comment on whether they expected to replace their systems during 1982. The responses showed that most respondents currently using WP will stay with the equipment they are now using.

Among stand-alone users, 67% said they would not be replacing their existing systems and 75% of the multiterminal users indicated they would not be doing so. Of the remaining respondents, 14% of the stand-alone users and 13% of the multiterminal systems users said they would be replacing their current systems with equipment from the same vendors.

The final group of respondents — 15% for stand-alone systems and 9% for multiterminal systems — indicated they will switch to a different vendor. Datapro noted that the trend seems to be that users are spending their purchasing dollars on enhancements to their existing equipment and that new systems sales will occur among first-time WP users. Both stand-alone and multiterminal systems users plan to expand by more than 100%, a figure which indicated that some users plan to add on a number of systems or workstations and more options. Users also indicated increased purchasing plans for additional software over their 1981 plans.

Multiterminal users appear to be decreasing their plans to purchase additional systems from different vendors, Datapro said. According to the research firm, this may indicate that either users feel that once having implemented a system, users find they are locked into the system and cannot tie into their vendors' equipment or that their systems requirements have not grown from the previous year's.

"The User Ratings of Word Processing Systems" survey is available for \$19 from Datapro at 1805 Underwood Blvd., Delran, N.J. 08073.

Dooley is editor of Computerworld Q.A., a quarterly that will be sent to CW subscribers beginning March 31.

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To Hit \$7 Billion This Year Rigid Disk Drive Sales Seen Up 36%

MOUNTAIN VIEW, Calif. — Total worldwide revenues for rigid disk drives this year will hit \$7 billion, up nearly 36% from 1980's \$5.2 billion in revenues for these products, according to a forecast made in the "1981 Disk/Trend Report" published here by Disk/Trend, Inc.

By 1984, shipments of rigid disk drives will total \$14 billion, averaging an annual growth rate of 26.4% between next year until the forecast horizon, the market research firm forecast.

This year, fixed disk drives will represent 67% of shipments, up from 59% of 1980's shipments. And by 1984, these units will comprise 84% of shipments (see chart), the report continued.

The sharpest growth will occur for fixed disk drives in the 30M-byte to 200M-byte storage range. Although drives with capacities of greater than 200M bytes comprised 36% of total revenues for rigid disk drives last year, these units will garner only 39% of total revenues in 1984, the report pointed out.

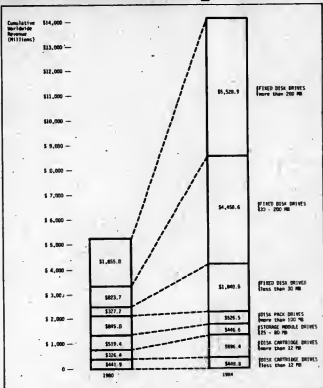
A sign of the vigor in the fixed disk drive segment of the industry is the entry of 17 new manufacturers this year. Twelve companies are U.S. firms, four are European and one is Japanese.

U.S. manufacturers this year will claim about 85% of the worldwide market for these products.

Despite the competitiveness of the market, IBM will continue to hold nearly a third of the market, with disks produced by plug-compatible manufacturers (PCM) capturing 7.4% of the market. The forecast noted IBM's strength will be in the production of its Piccolo 8-in. Winchester for the OEM market and its 3370, 3375 and 3380 models.

Other captive U.S. manufacturers will also produce nearly a third of the total revenues, the report said.

Within the fastest growing segments of the fixed disk market, shipments of 14-in. Winchester in the storage range of less than 30M bytes will decline steadily after



Consolidated Worldwide Disk Drive Shipments

having reached their peak in 1979. Worldwide shipments of these units declined 11.7% last year and 1981 shipments will be

down another 23.8% or 34,000 spindles, the report forecast.

On the other hand, unit shipments of fixed 8-in. and 5¼-in. drives are expected to increase to 190,000 spindles, an increase of 186% this year, the report noted. Worldwide revenues for these units are expected

(Continued on Page 70)

IBM Names Two Divisions In Information Systems Group

ARMONK, N.Y. — As part of the reorganization made in October [CW, Oct. 12], IBM has announced the names of the two new marketing divisions within the newly formed Information Systems Group. The two divisions, which will become operational in January, will combine the firm's current Data Processing, General Systems and Office Products divisions.

The new corporate units are the National Marketing Division and the National Accounts Division. Each division will market IBM's full product line.

Headquartered in Atlanta, the National Marketing Division will sell to large, medium and small customers throughout the U.S. J. Richard Young will be president of the division. He is currently an IBM vice-president and president of the Office Products Division.

The National Accounts Division, which will be located in White Plains, N.Y., will be responsible for selected large customers with complex information processing needs, IBM said. George H. Conrades, currently president of the Data Processing Division, will be president of this unit.

In addition to announcing the names and executives of these new divisions,

IBM also established a Systems Supplies Division within the Information Systems Group. Consolidated within this unit are the supplies operations for the current Information Records and Office Products divisions.

The new division will be responsible for marketing and distributing IBM supplies to all U.S. customers. Everett H. Van Hoesen has been named president of this division. He is currently president of the Information Records division.

Accounts Assignment Due

Although IBM announced the names of the new divisions, a spokesman said the firm has not finished the process of assigning accounts to the two divisions. That task will be completed in January, he said.

The company is making an effort to minimize the movement of employees, according to the spokesman, who said it would be fair to assume that General Systems Division employees will largely be assigned to the National Marketing Division and Data Processing Division employees will be folded into the National Accounts Division.

Exports Exceed Imports: Cbema

WASHINGTON, D.C. — Exports of computers and business equipment exceeded imports by a three-to-one margin for the year to date, according to statistics recently released here by the Computer and Business Equipment Manufacturers Association (Cbema).

For the first nine months of this year, exports of these products totaled \$7.9 billion while imports totaled \$2.6 billion, resulting in a positive trade balance of \$5.3 billion. This is a 19% increase from last year's trade figures for the same period.

At the present rate, the U.S. favorable trade balance for these products should total \$7 billion, Cbema said.

Exports of data processing equipment were \$6.4 billion or 81% of total exports in this category of products, up 19% from last year's nine-month DP product exports of \$5.4 billion. Imports of DP products totaled \$1.2 billion, a 45% increase from last year's nine-month import total of \$815 million.

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Weesper Corp. has withdrawn its registration statement relating to the sale of its common stock, which it filed with the Securities and Exchange Commission in August, because of current market conditions.

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EG & G, Inc. has increased its quarterly dividend from 12.5 cents to 16 cents per share of common stock. The

cash dividend is payable Feb. 1 to shareholders of record on Jan. 8.

\$\$\$
The Palmer Organization L.P. has invested \$200,000 in Graphic Communications, Inc. to finance the design and development of a market graphics system line of products.

\$\$\$
Rosa Systems, Inc., a supplier of financial decision support and data base software packages, has obtained \$1 million in financing for general working capital.

Compro Resources Corp. has been established to provide a nationwide consulting service to the financial and information systems and services industries. The firm can be contacted at 23 Braeburn Drive, New Canaan, Conn. 06840.

Omni Software Systems, Inc. is a new firm that specializes in financial and accounting software. The first 23 packages in its library cover client write-ups, 1040 tax preparation, budgeting and forecasting, tax planning and various other tools. The

company is located at 146 N. Broad St., Griffith, Ind. 46319.

Metrix, Inc. has been formed by Gerald Murine, formerly of Softch Corp., to support companies in structuring a software quality metrics analysis technique. It

is headquartered at Suite 310, 10150 Sorren Valley Road, San Diego, Calif. 92121.

Ellsworth & Associates is a firm providing user-friendly documentation for software packages. It is based at 6333 Odessa Road, Madison, Wis. 53719.

Supershorts

Tandy Corp. and Matsa S.A. of France have signed a definitive agreement to set up a manufacturing operation in France to initially manufacture TRS-80 Model III microcomputers. The agreement is subject to approval of the boards of directors of both companies and formal approval of the French government. Under the agreement, a corporation called Matsa-Tandy Electronics, S.A. will be formed.

Savin Corp. announced that a \$9 million financing package has been arranged through Oppenheimer & Co., Inc. in the form of a limited partnership. The funds

will be used by the partnership to finance the marketing of a new line of computer-based information systems, which will be formally introduced sometime this month.

Instrument Laboratory has formed a division to design, manufacture and market high-performance multuser microcomputer systems.

Matsa-Harris Semiconductors S.A. and Intel Corp. have formed a group called Cinatel, a jointly funded center for the design of integrated circuits.

Orders & Installations

Systematics, Inc. has signed a contract with Chase U.S. Consumer Services, Inc., a subsidiary of the Chase Manhattan Corp., to provide remote data processing services for a nationwide system of financial end lending services to consumers and small businesses.

Loct Corp. has received a \$2.5 million order for intelligent terminals and associated data concentration equipment. The order came from American Airlines and the equipment will be used for automating passenger reservations and printing tickets, according to a company spokesman.

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Executive Corner

• Jacques Maisonneuve has been named a member of the Corporate Office and the Corporate Management Committee at IBM.

• Burton Dell was replaced by Michael Nakonechny as president of Transducer Systems, Inc.

• Robert Meyerson has been elected chairman and chief executive officer and Raymond Myro has been named president and chief operating officer at Telsun Corp.

• John Rowley has been appointed chief operating officer at Digital Research, Inc.

• Ronald Abelman has been named president of the Conrac Division of Conrac Corp.

• John J. Clancy has been named vice-president of computer-aided design and manufacturing at McDonnell Douglas Corp.

• Donald Rastler has been elected a vice-president at Fairchild Industries, Inc. and Anthony Spurlis has been named a corporate vice-president at that firm.

• William Treadwell has been named vice-president of sales at Frolink Corp.

• O. Gene Gabbard has been named to the newly created position of vice-president, corporate strategies and programs, at M/A-Com, Inc.

• Robert E. McManley has been promoted to vice-president of engineering and technical services for Communications Technology Management, Inc.

• William Grover has been appointed vice-president of central operations in Sperry Univac's Marketing and Services Division.

• Data General Corp. has appointed James R. Barnes vice-president of peripherals development.

• Robert West has joined Business Research Corp. as vice-president, research.

• Gnostic Concepts has named Edward Henderson and Ralph A. Anavy senior vice-presidents.

• Vantage Computer Systems, Inc. has announced the appointment of Forest Majors as senior vice-president of sales and marketing.

Schoenberg Appointed '82 Chairman

Adapso Announces New Slate of Officers

ARLINGTON, Va. — Lawrence J. Schoenberg, chairman of the board and chief executive officer at AJ25 Computers, Inc., has been appointed 1982 chairman of the board of the Association of Data Processing Service Organizations, Inc. (Adapso) and Fred Lafer, senior vice-president and general counsel for Automatic Data Processing, Inc., was elected to

the vice-chairmanship of the board.

George Raymond, president of Automatic Business Centers, was named treasurer.

Those elected to Adapso vice-presidential posts for 1982 were Richard Thatcher of Atlantic Management Systems; David Sherman of General Electric Information Services Co.; George Shea of

National Data Corp.; Arthur Kramer of Xerox Computer Services; John P. Imley, Jr. of Management Science America, Inc.; Stephen Beach of Control Data Corp.; and J. Allen Huff of University Computing Co.

Newly elected to the board were David Campbell of the Computer Task Group, John N. Maguire of Software AG of North America and J. Al-

len Huff.

Elected to the presidencies of the three Adapso sections — Software Industry Association, Remote Processing Services Section and Data Center Section — were, respectively, Burt Grad, chairman of Heights Information Technology Services; David Sherman, and Douglas Allenbern of NLT Computer Services Corp.



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Memorex Takeover Gets Shareholder OK

SANTA CLARA, Calif. — Shareholders of Memorex Corp. have approved the proposed acquisition of the firm by Burroughs Corp.

Under the terms of the proposal, Burroughs will acquire Memorex as a wholly owned subsidiary for \$14 per share of Memorex common stock.

The acquisition will become effective upon the filing of documents required by the state of California.

Other Moves

E-O Data Corp., a distributor of computer peripherals and supplies in the eastern U.S., has been acquired by a group of investors headed by its president, Gerald Lavine. Terms

Mergers & Acquisitions

were not disclosed.

Cosshare, Inc. has acquired the microcomputer software business of Advanced Management Strategies, Inc., whose products are sold under the trade name Target. The new unit will operate as a subsidiary under the name Target Software, Inc.

Timeplex, Inc. is trying to sell Cermetek, Inc. to a group of private investors headed by Howard Raphael, president of Cermetek. Timeplex has also acquired a minority interest in a West German distributor, Controlware GmbH. Terms of these ac-

rangements were not disclosed.

Digital Research, Inc. has entered into an agreement to buy MT Micro-Systems, Inc., author of the Pascal/MT+ programming language. This language now will be available through Digital Research.

Rapidata, Inc. will merge into National Data Corp. upon the approval of Rapidata stockholders. Terms were not detailed.

Data Law Co. has signed an agreement to acquire Far-West Data Systems of Irvine, Calif. Terms were not

disclosed.

Datametrics Corp. has purchased the assets of Micro Business Applications, Inc. in a stock-for-assets transaction.

Dynatech Corp. has acquired Trans-Net Engineering, Inc. for 46,700 shares of Dynatech common stock.

Automatic Data Processing, Inc. has acquired a majority interest in Rechenzentrum Frankfurt KG of West Germany for cash and contingent payments.

E-H International, Inc. will acquire Minicomputer Technology, Inc. for convertible notes having a face value of \$600,000.

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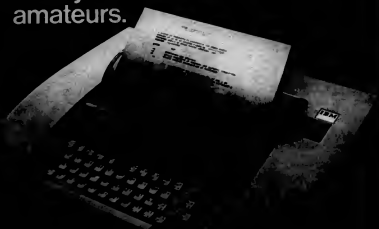
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We are seeking a Systems Analyst who will be responsible for development of informational systems to support the needs of Quality Assurance, Research and Development, and the Engineering functions of the Company. Also responsible for identifying user needs, system design, program specifications, systems testing, documentation, implementation and maintenance. The Ross operating environment is a dual S/VS/36-4041, DOS/VS, PL/I, CICS, DBMS.

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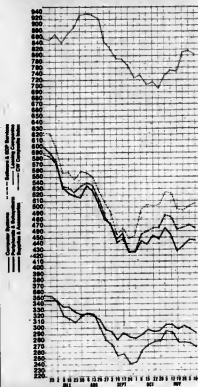
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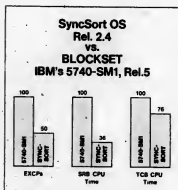
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The September 1, 1971 issue of **COMPUTERWORLD** carried a page-one story about a series of sorting benchmarks conducted at a New York bank. The article reported that a new "Synchronized Sort" had used dramatically fewer computer resources than the IBM sort programs against which it had been tested.

A couple of other quotes from the article are worth noting. One was that the new sort was "unbeatable by other commercially available sorts on a one-for-one comparison." The other was that "a patent is being sought to cover the new concepts" of the sort.

That "Synchronized Sort" soon became known by a shorter, punchier name—SyncSort. And a lot of things have happened to it and to sorting during what might be called the "SyncSort Decade." Here are a few of them...

- **The Patent**—We not only applied for it, we got it. U.S. Patent 4,210,961 recognizes a long list of "sorting innovations" we pioneered throughout the decade.
- **Growth**—The number of SyncSorts installed rose from zero to over 6,000. We are now the sorting choice of more than 70% of the nation's major data processors, including 46 of the top 50 companies on the Fortune 500 list.
- **Equality**—We brought high-performance sorting to DOS and CMS—by incorporating our OS breakthroughs into new SyncSorts for those systems.

• **Performance**—It got better and better as new releases of SyncSort appeared. We are still unbeatable by any other sort. SyncSort simply uses significantly less CPU Time and EXCPs to do the sorting job. That became apparent again when we tested IBM's latest OS release—5740-SM1, Release 5. It was another example of "too little, too late."

• **Productivity**—SyncSort has reinforced its reputation as the "programmer's best sorting friend." As the programmer shortage has tightened and human costs have gone up, we've constantly added new features to make simple applications that use the sort faster and easier. Things like INCLUDE/OMIT, INREC/OUTREC, SUM, and new Record Formatters.

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